APRIL 22, 1954

ENGINEERING NEWS-RECORD

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BIGGE
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Crane with precast [illegible]

★ Pumps to control Everglades floods (p. [illegible])

★ Prestressed block-beam costs cut (p. [illegible])

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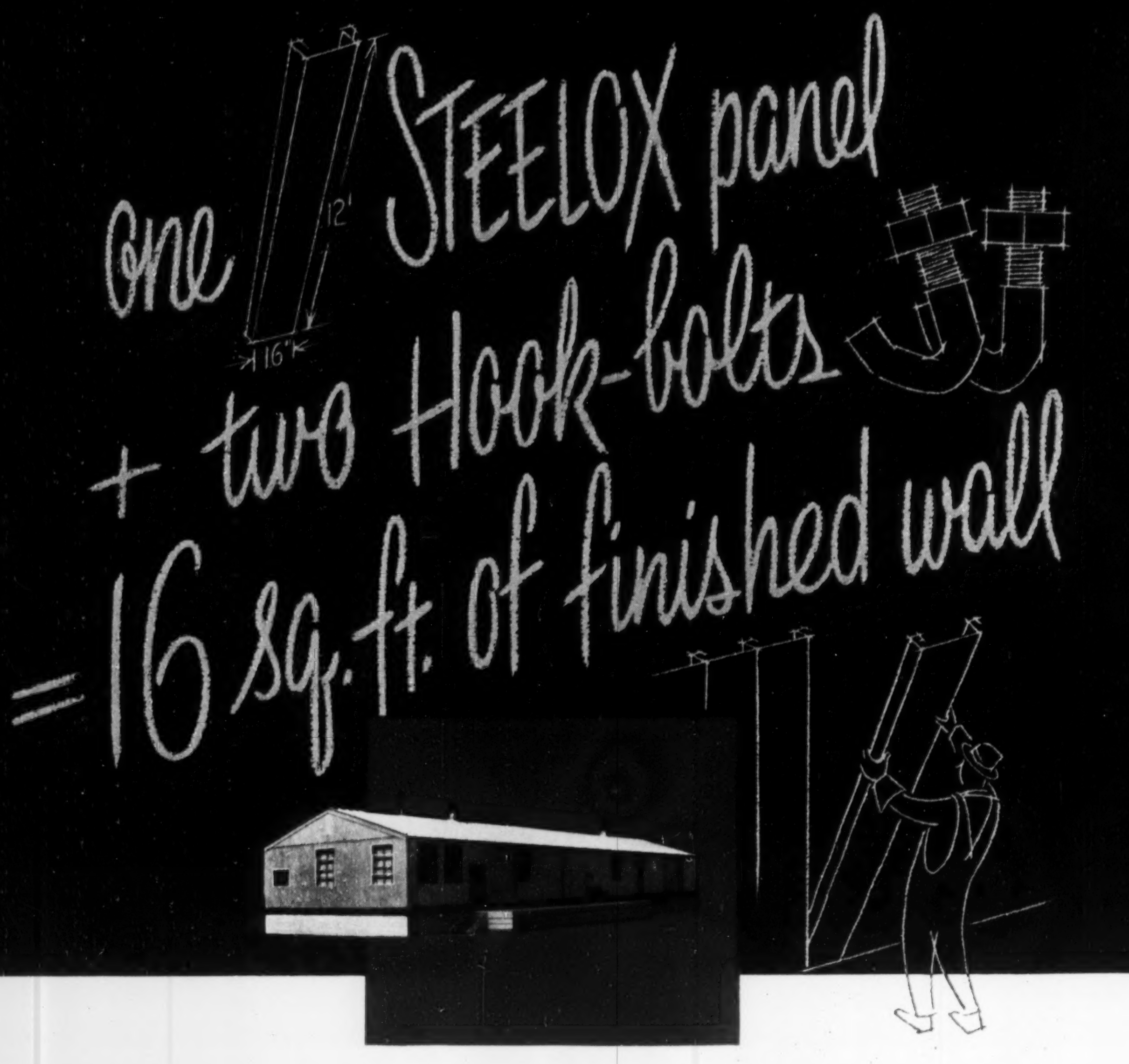

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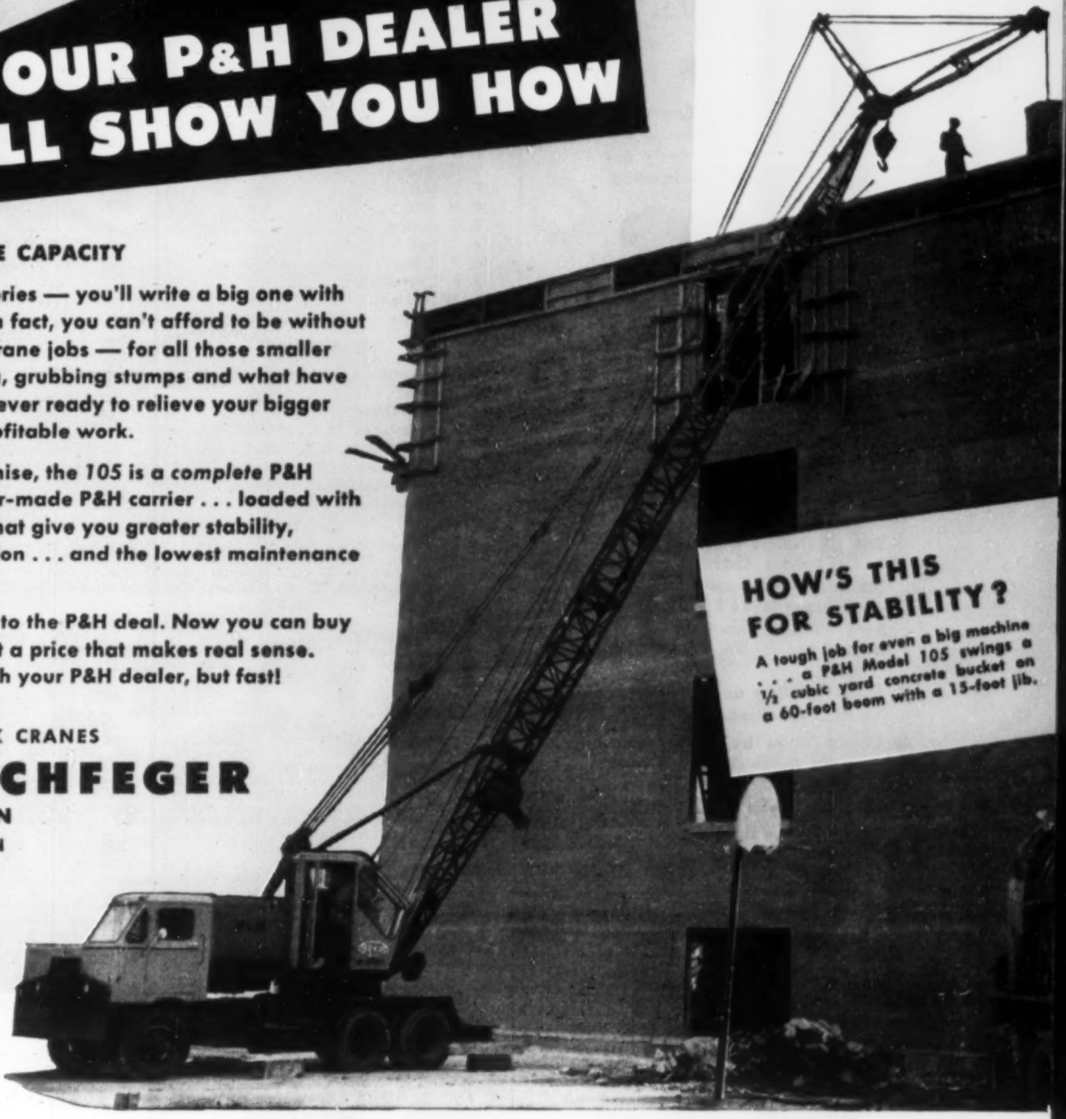

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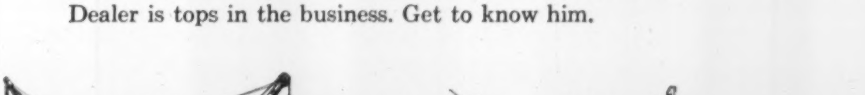

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Number of copies of this issue printed: 62,669
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Robert F. Boger
Publisher

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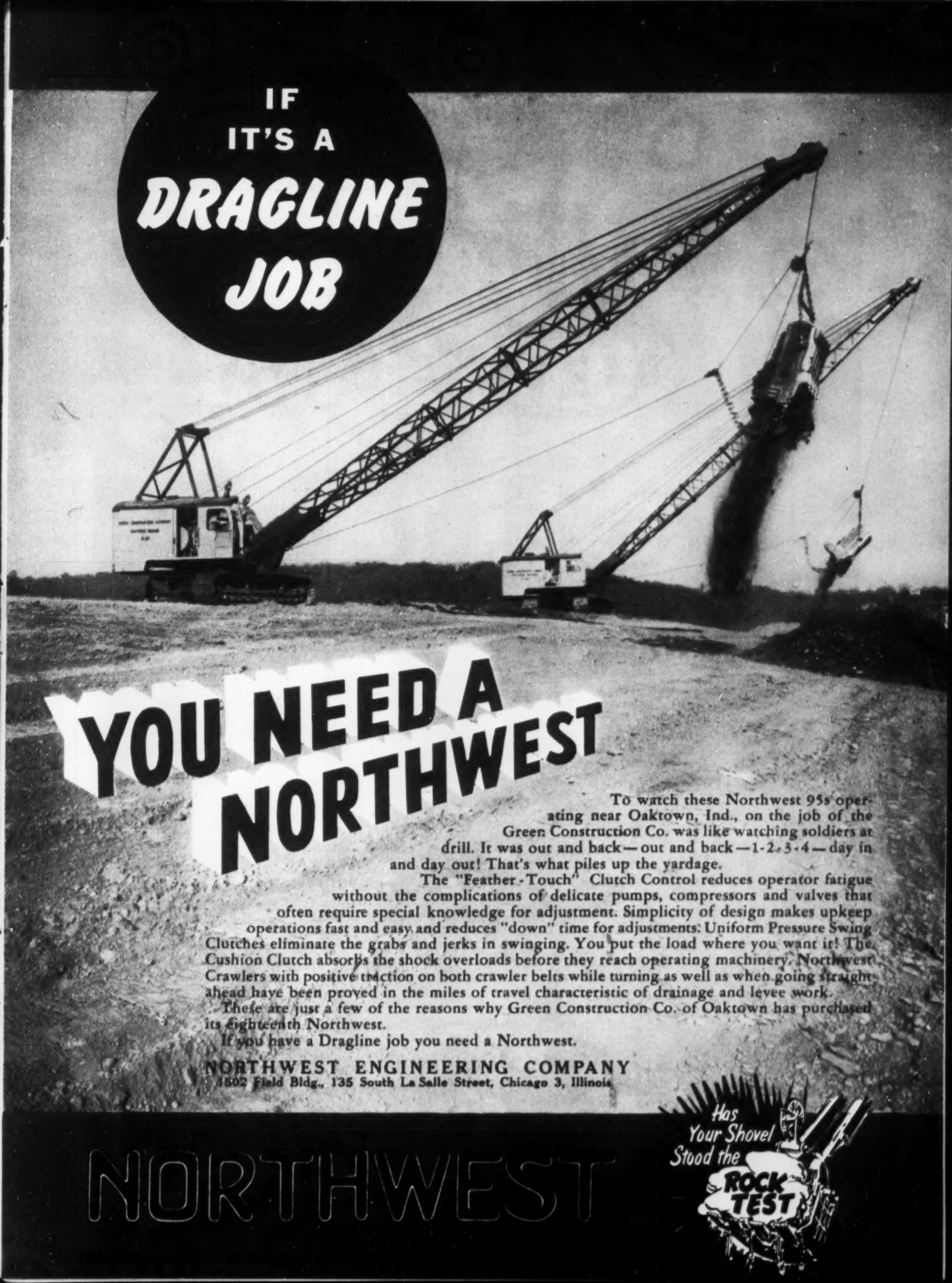

To watch these Northwest 95s operating near Oaktown, Ind., on the job of the Green Construction Co. was like watching soldiers at drill. It was out and back—out and back—1-2-3-4—day in and day out! That's what piles up the yardage.

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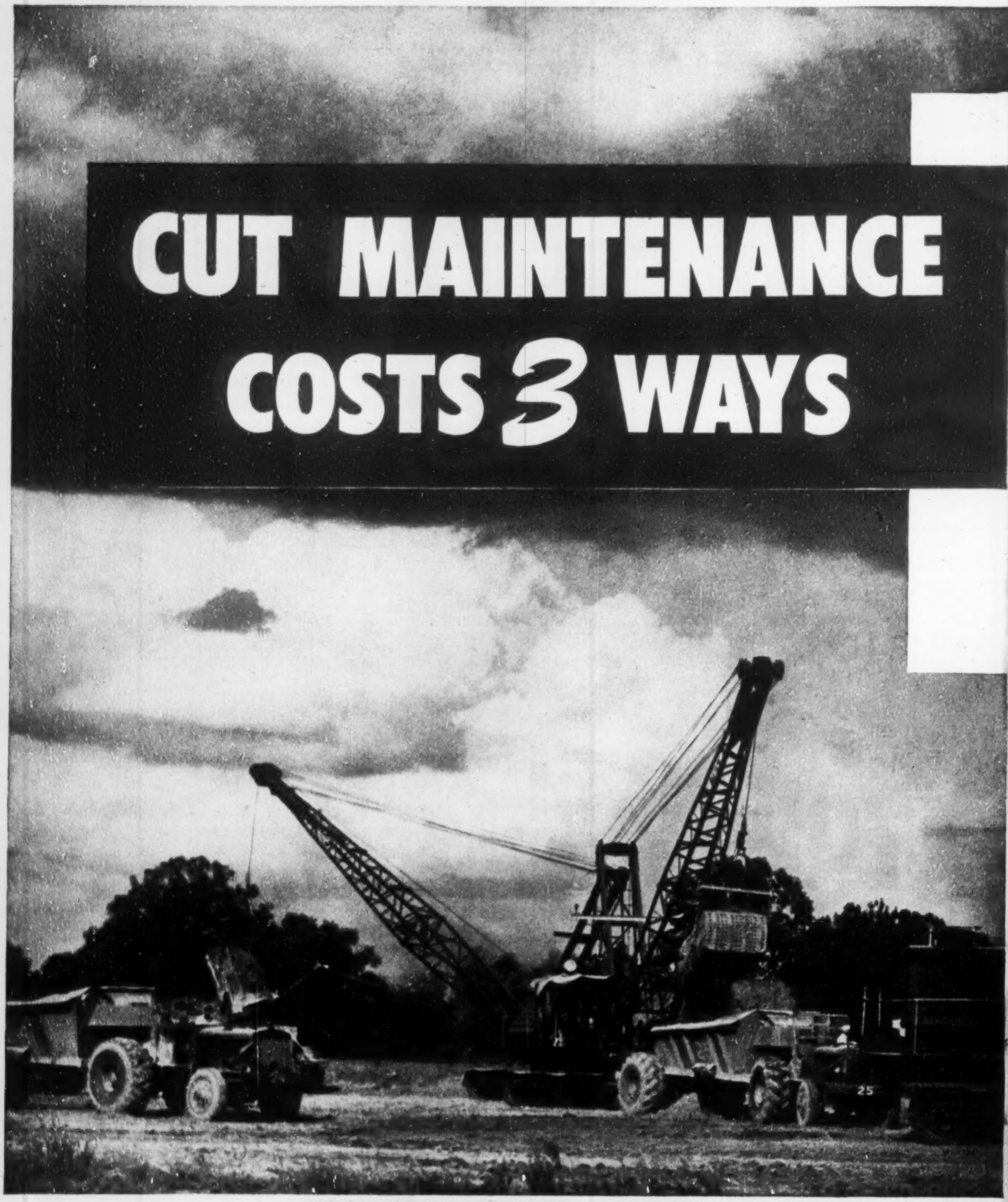
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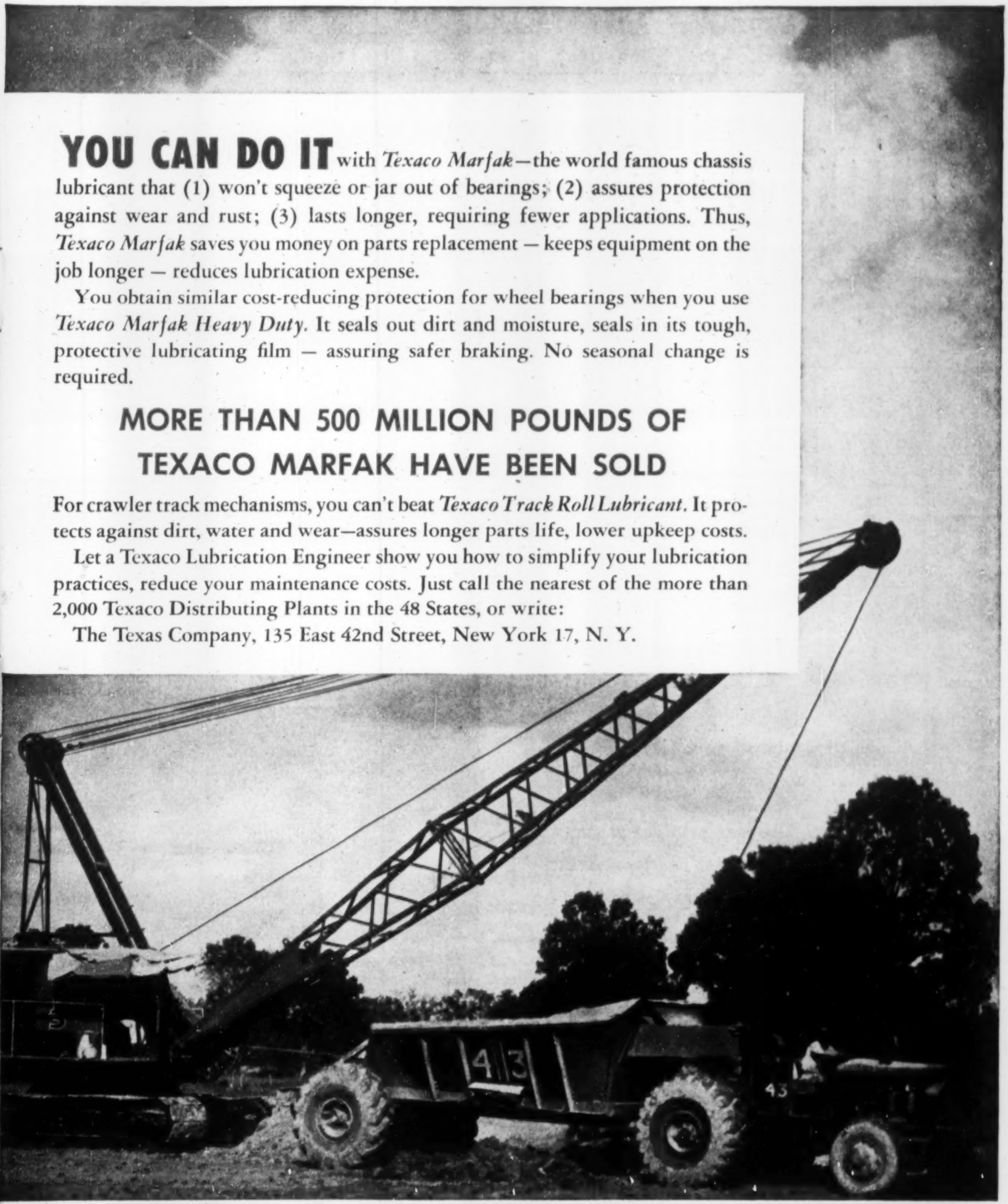

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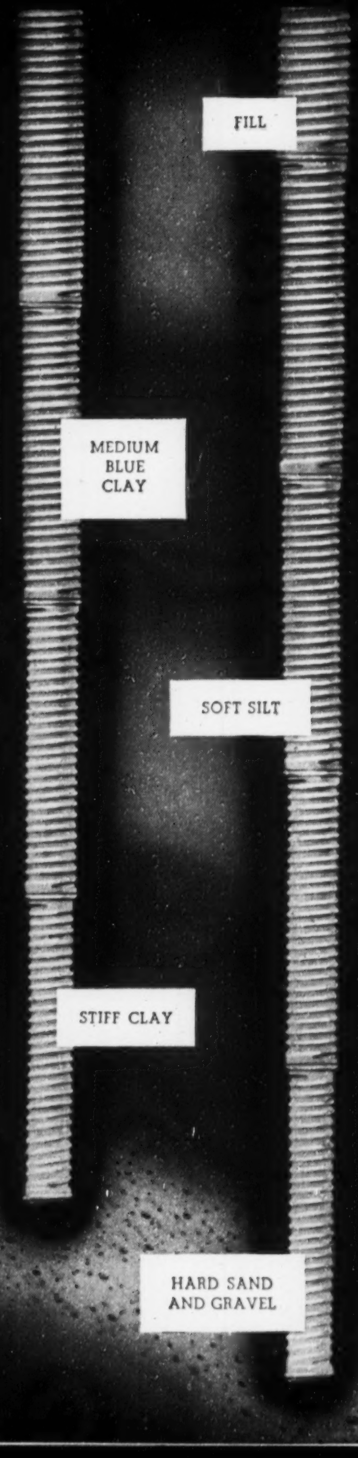

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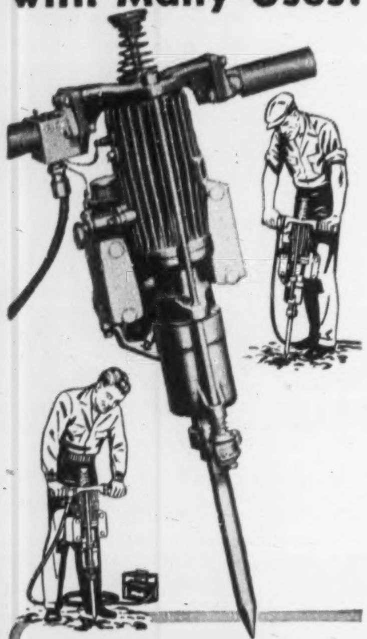

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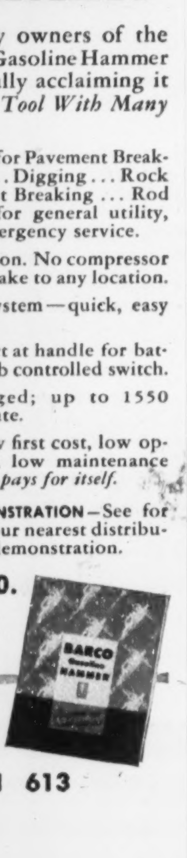

Ask For
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BULLETIN 613

READER COMMENT

For better concrete

Sir: The news item, "CIB Opens Fight For Better Concrete" (ENR March 11, p. 21) shows that in one area, at least, a group of those interested in good construction have taken some steps to improve the quality of concrete construction. It is to be observed, however, that the leaders are not building officials nor representatives of engineering or architectural societies. In the past, the pressure for improvement of quality of structures largely came from the professional societies with the backing of building officials.

The American Concrete Institute, for reasons not known, recently decided not to reprint again the 1940 Joint Committee Report on Concrete Plain and Reinforced even though that document is the only one related to concrete approved by the major interested professional groups, and is one of the best available guides on good concrete practice.

The efforts of trade and similar organizations are necessary and commendable but, in my opinion, real improvement wholly in the interests of the public, will come when the engineering societies again show concern and provide leadership by a joint effort such as the Joint Committee represented.

Miles N. Clair
The Thompson & Lichtner Co., Inc.
Brookline, Mass.

Cooperation, not funds

Sir: The report of the Mississippi Valley Conference of State Highway Departments, which appears on page 22 of the March 11, 1954, issue of Engineering News-Record, contains the following statement:

"They endorse the proposal now before Congress for using federal aid highway funds to pay for moving utility installations where necessitated by highway construction."

The resolution adopted by this conference endorsed the proposal then before Congress under H.R. No. 8127 This bill, which was later passed by the House, does not provide for the use of federal-aid highway funds to pay for moving utility installations where necessitated by highway construction. Section 10 of that act provides that "The Secretary of Commerce is hereby directed to cooperate with the state highway departments in a study of the problems posed by necessary relocation and reconstruction of public utilities services resulting from highway improvements authorized under this Act." This is quite different from the statement above quoted from your March 11 issue.

O. L. Kipp
Assistant Commissioner
and Chief Engineer
State of Minnesota
Dept. of Highways

Waterworks careers

Sir: Your editorial in the Feb. 25 issue on "Fostering Waterworks Careers" was very timely, and emphasized a serious problem in water works management, among both publicly owned and privately owned organizations.

I did not hear Mr. Dore's speech to which you referred, but I did hear Mr. Murdoch, and I know that he implied in his talk a very important extension of the subject beyond what you have recognized in your editorial.

Many of us believe that the basic reason for the low salaries in the waterworks field is the fact that the waterworks are, in general, selling their product at such low prices that they do not have the financial resources that they should have. Through long habit water has been sold so cheaply that its users do not appreciate its true value, while at the same time the resulting short-sighted economy holds the standards of waterworks design, construction and operation (including salaries) below the levels which the importance of the service would easily justify.

This basic concept was the subject of the resolution which was adopted by the Fuller Award Society of the American Water Works Association at Kansas City in 1952, and which more recently has been the subject of further consideration by its board of directors.

Anything that you can do to promote further the realization of these facts will be appreciated.

P. S. Wilson
Manufacturer's Representative
Glen Ridge, N. J.

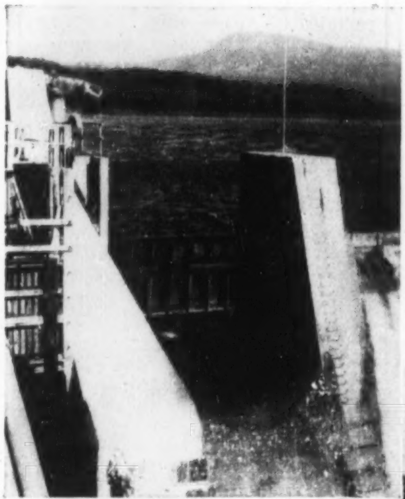
Sir: As a 33-year old ex-water plant superintendent with a continuing interest in water purification, I can say your editorial (ENR Feb. 25, p. 80) falls on sympathetic ears.

You struck the major part of the nail's head by indicating that waterworks careers would be fostered by a rise in wage levels, but another im-

(Continued on page 10)

Bascule Crest Gates

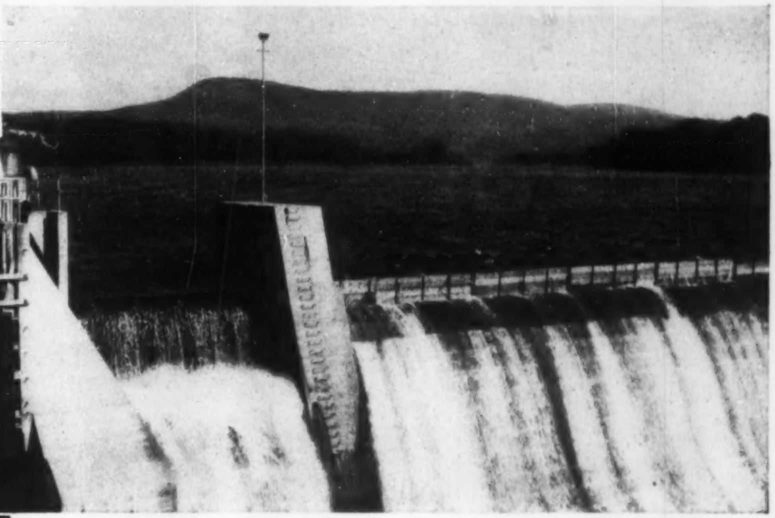
by SMITH



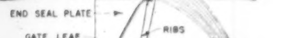
Above:
Gate in closed position.

Left: This 8′-6″ by 25′-0″ SMITH-BASCULE GATE at the Holyoke Water Power Company on the Connecticut River is used principally for sluicing ice and debris away from the intake supplying a 22,000 HP SMITH-KAPLAN turbine. It also helps to prevent the loss of flashboards at times of moderate increases in river flow.

Below: Gate nearly closed.



Below:
Gate in full open position.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portant factor also should be mentioned. Reference is here made to the predominance of proud, conservative, experienced, older men who attend water works conferences in all parts of this country. The absence of fresh, young talent from these important gatherings is not only disheartening, but downright deplorable.

I visit many water treatment plants where young men are employed industriously running tests and keeping records. Conversations with these men reveal not only that they are underpaid, but that they must pay their own expenses and often lose time in order to attend important meetings. It is further indicated that they cannot afford to join the important American Water Works Association sections which sponsor many training schools and other professional activities. It would appear that a valuable contribution could be made by the management of water utilities if such expenses could be defrayed and attendance at least at regional meetings be encouraged whole-heartedly.

It is submitted that there is a strong under-current of feeling on the part of brass hats in many water companies which discourages those younger men they employ at present. Such a situation, coupled with unattractive wage possibilities, is detrimental to fostering waterworks careers.

For the record, the same problems are faced in the wastes treatment field.

V. W. Langworthy
The Chlorine Institute, Inc.
New York, N. Y.

Old bid clearing house

Sir: We were interested in reading the item "Bid Clearing House," page 17, Engineering News-Record issue of March 4.

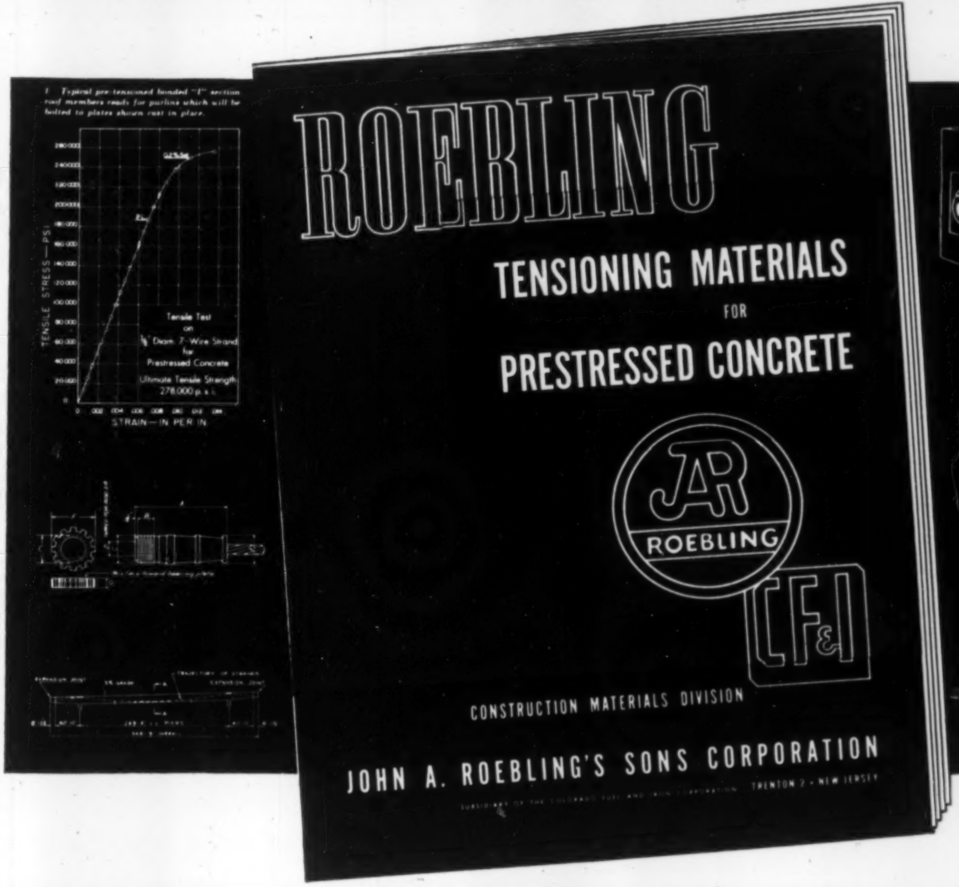
The idea is nothing new; we initiated such a plan statewide six years ago.

Architects and consulting engineers throughout Iowa consult this office for the record of lettings scheduled and in subsequent discussions arrive at the best date for scheduling each letting in question.

It is far sounder practice, in our opinion, to discuss the scheduling of lettings with the architect or engineer for his handling with the owner. This is one of many fine developments resulting from a statewide Joint Cooperative Committee comprising representatives of our association, the Iowa Chapter American Institute of Architects and the professional practice section of the Iowa Engineering Society; a

(*Continued on page* 12)

NEW BOOKLET...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...time- and cost-saving facts at your fingertips

IN WORDS AND PICTURES, tables and diagrams, here's complete and up-to-the-minute information on tensioning materials for prestressed concrete. It describes Roebling Uncoated Strand for pre-tensioned bonded design, and Anchor Fittings and Galvanized Strand for post-tensioned design.

Other pages describe tensioning elements for post-tensioning; imbedded and block-assembly applications; properties of High Strength Prestressed Concrete Wire; and recently completed prestressed concrete structures.

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CALENDAR

Pacific Southwest Conference ASCE, Senator Hotel, Sacramento, Calif., April 29-May 1.

Air Pollution Control Association, Patten Hotel, Chattanooga, Tenn., May 3-6.

Wire Reinforcement Institute, spring meeting, Boca Raton Hotel, Boca Raton, Fla., May 3.

Concrete Reinforcing Steel Institute, Boca Raton Hotel, Boca Raton, Fla., May 3-8.

7th World Health Assembly, World Health Organization, Geneva, Switzerland, May 4.

Annual meeting, Steel Joist Institute, Boca Raton Club, Boca Raton, Fla., May 4.

Highway Transportation Congress, Hotel Mayflower, Washington, D. C., May 4-6.

American Welding Society, national technical meeting, Hotel Statler, Buffalo, N. Y., May 5-7.

N. Y. State Society of Professional Engineers, Engineering Industries Exposition, Hotel Commodore, N. Y. City, May 6-8.

Annual meeting, Building Officials Conference of America, Inc., Bellevue-Stratford Hotel, Philadelphia, Pa., May 10-13.

Engineering Institute of Canada, annual meeting, Quebec, Canada, May 12-14.

ASCE Structural Conference, Continental Hotel, Kansas City, Mo., May 13-14.

National Fire Protection Assn., Hotel Statler, Washington, D. C., May 17-21.

American Water Works Assn., annual conference, Seattle, Wash., May 23-28.

Column Research Council, Engineering Societies Building, New York, May 27, 28.

National Society of Professional Engineers, Schroeder Hotel, Milwaukee, Wis., June 9-12.

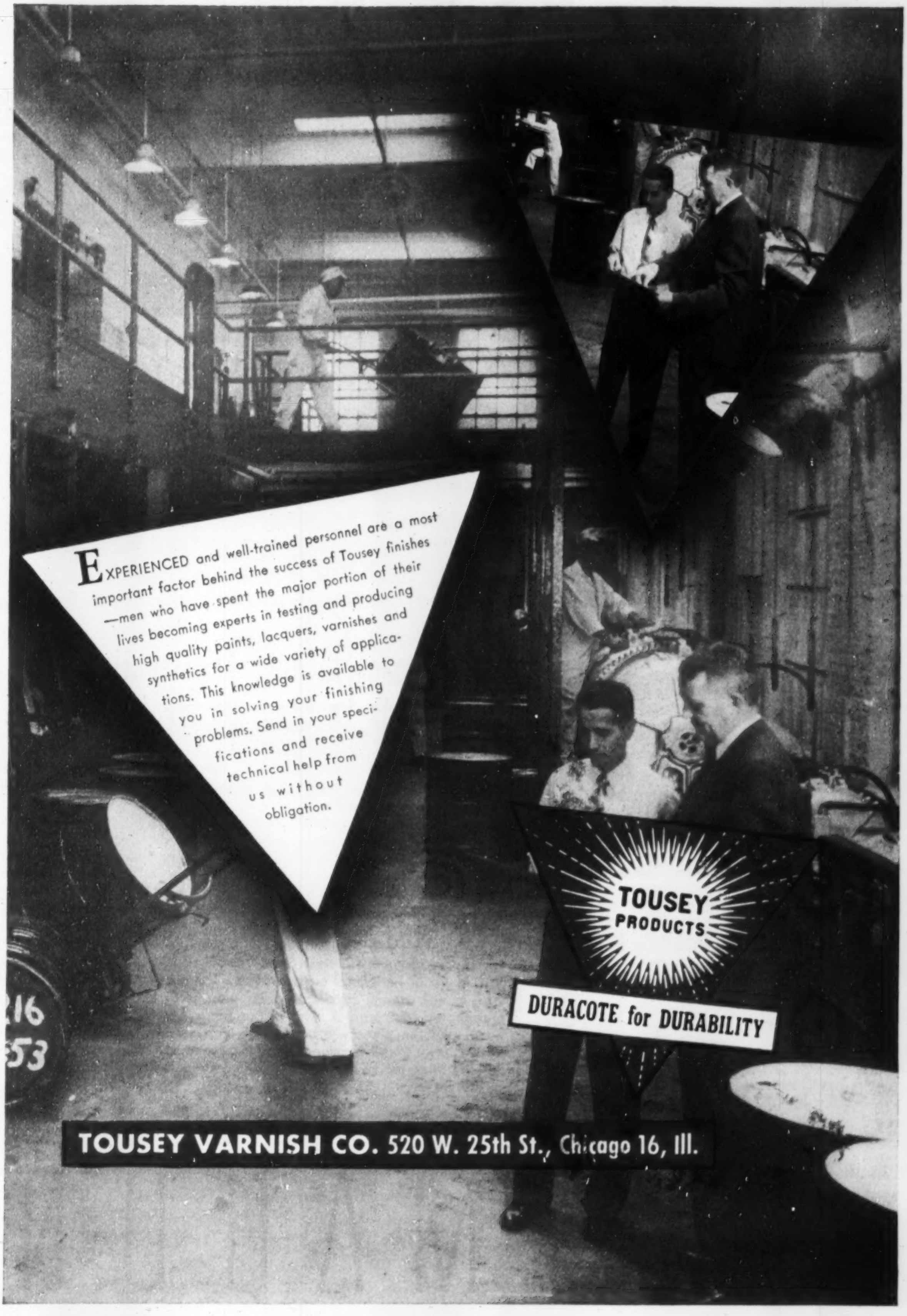
American Society for Engineering Education, University of Illinois, Urbana, June 14-18.

American Society of Civil Engineers convention, Chalfonte-Haddon Hall Hotel, Atlantic City, N. J., June 14-19.

American Institute of Architects convention, Statler Hotel, Boston, Mass., June 15-19.

Conference on Thin Concrete Shells, Massachusetts Institute of Technology, Cambridge, Mass., June 21-23.

American Society of Civil Engineers convention, Chalfonte-Haddon Hall, Atlantic City, N. J., June 14-19.



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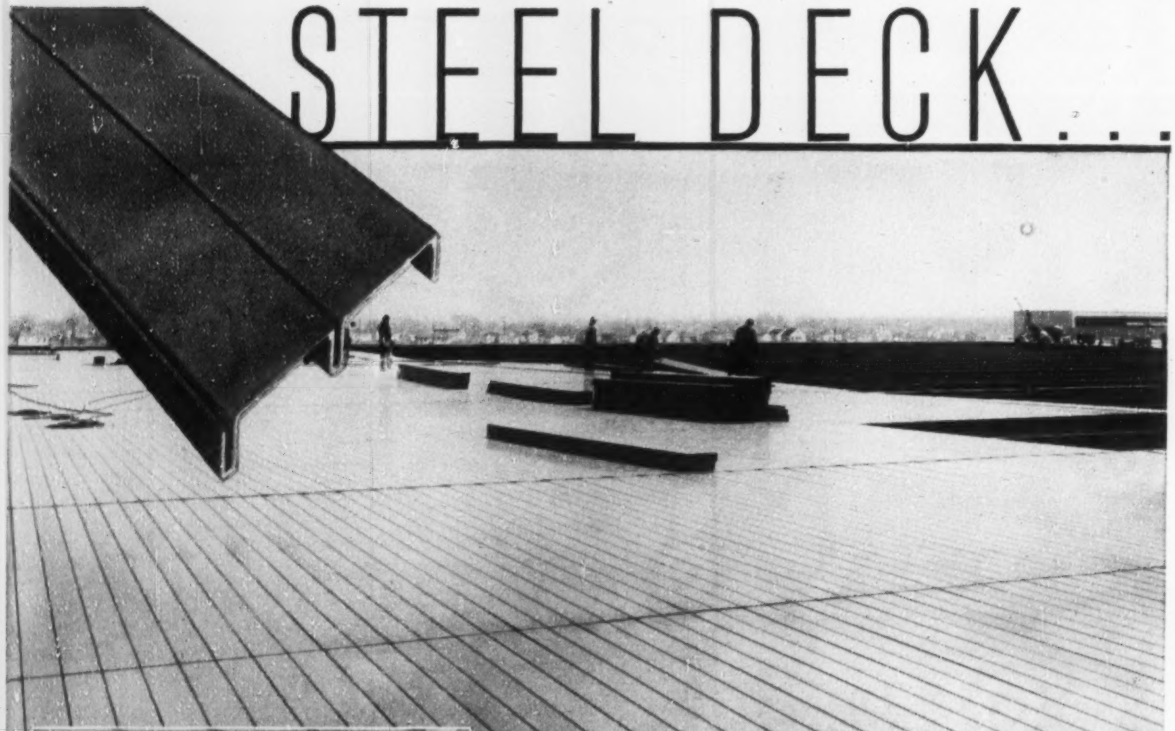

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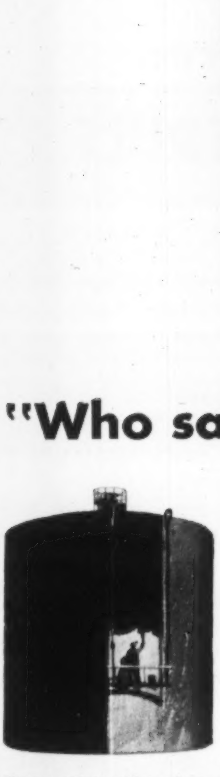

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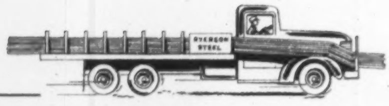

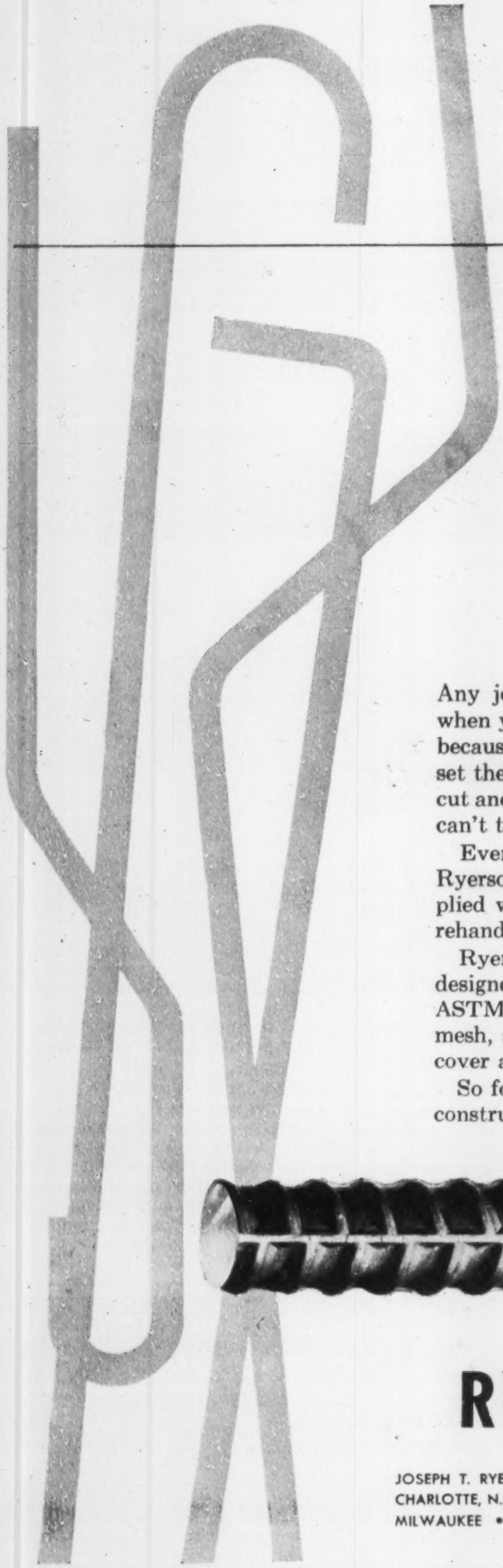

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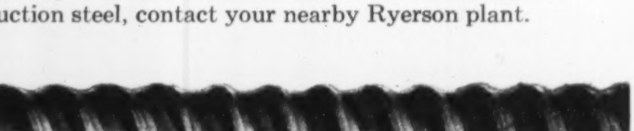

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APRIL 22, 1954

Vol. 152, No. 16

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THE CONSTRUCTION WEEK

PLASTIC FUTURE—More widespread use of plastic pipe in water supply systems is foreshadowed in the announcement that results of a two-year study of suitability will be released May 23 at the American Water Works Assn. meeting in Seattle.

The study is the result of two years of careful testing by the National Sanitation Foundation (Ann Arbor, Mich.) on various kinds of plastic pipe for use as drinking water transmission and distribution lines.

Insiders say the report generally will favor the plastics. If it does, the usually ultra-conservative AWWA may open a lot of doors to greater use.

MONEY PROBLEMS—How to find money to finance needed public works got some novel answers:

A California legislator proposed a ½% increase in state sales taxes to help finance water projects considered essential to the future economic development of the state. He figured that such a levy would raise $50 million a year.

In Harris County (Houston) Tex., the chamber of commerce came up with a plan to levy special taxes to raise $200 million in 20 years to finance a proposed freeway system. County motorists would pay $7.50 a year in special license taxes; truckers would pay up to $15 a year; an additional 1-cent would be collected on gasoline gallonage.

And in Ohio, state treasurer R. W. Tracy reported, somewhat sadly, that revenues from two sources especially tailored to pay the state's highway construction bills—new taxes on trucks, and an added 1-cent per gallon on gasoline—would yield about $12 million, instead of the $43 million that legislators expected when the taxes were levied.

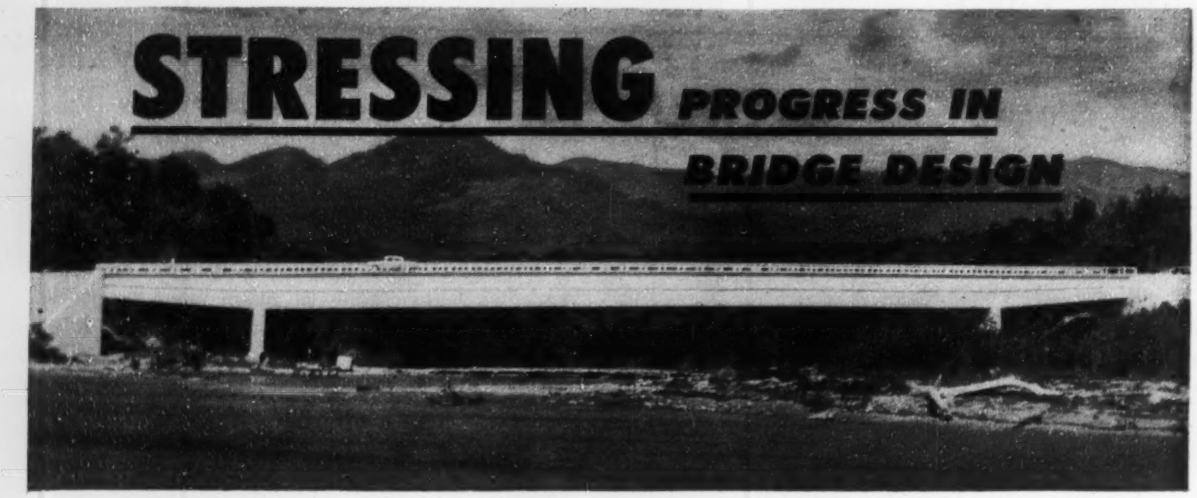
WON'T TAKE BLAME—Smarting under the charge (by general contractors) that they are often the cause of delays in completing state building work, North Carolina plumbing and heating contractors have come out in hearty support of state action to hold somebody responsible.

Last January, the state announced it would place on the generals the responsibility for such delays. The generals fought back, and last week succeeded in having the state agree to make the generals' bonding companies responsible (ENR April 15, p. 17).

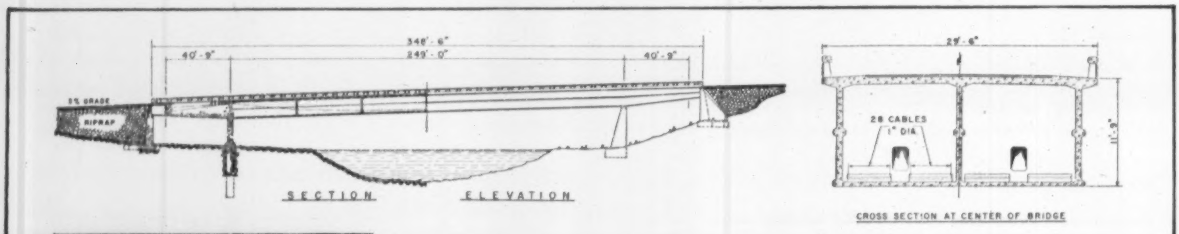
But the plumbing men wouldn't let it go at that: A resolution at a meeting in Asheville called attention to their "sincere desire" to complete state building work without delay.

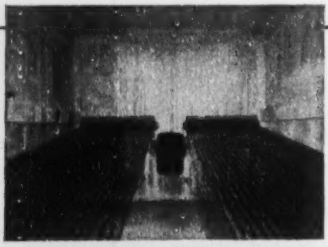
NO SECRET—Before anyone hastens to put in a bid on that $244-million work listed as programmed for Kirtland Air Force Base in ENR (p. 23) on April 15—it should be added hastily that the figure is $244,000. ENR's printers have become too used to bigger figures.

STRESSING PROGRESS IN BRIDGE DESIGN



Cuba's Cañas River Bridge Features Prestressed Reinforced Concrete Two-cell Box Girder, with 249-ft. Clear Span


348'-6"
40'-9"
249'-0"
40'-9"
5% GRADE
RIPRAP
SECTION
ELEVATION
29'-6"
28 CABLES
1" DIA
11'-9"
CROSS SECTION AT CENTER OF BRIDGE



● For low maintenance costs, concrete was selected for this bridge over the Cañas River, on the highway along Cuba's south coast between Trinidad and Cienfuegos. For utmost economy, the Republic of Cuba selected post-tensioned concrete.

This new bridge is said to be the longest clear-span, prestressed, reinforced concrete bridge in the Americas, and third longest span of its type in the world. The center span, 249′ in length, is of two-cell, hollow-girder construction. Width overall is 29′6″, and each cell is 11′9″ x 13′5″. The structure carries a 19′8″ roadway and two sidewalks, each 4′11″ wide.

Each hollow-box girder is post-tensioned against solid concrete anchorages 40′9″ long, by means of 28 one-inch cables. The load is transmitted through steel bearing plates, with take-up bolts which are accessible through inspection chambers in the end spans.

Soundness of the prestressed design and its practicability from a construction standpoint are evidenced by this slim, graceful structure which bespeaks quality in every line.

CAÑAS RIVER BRIDGE
on Trinidad-Cienfuegos Highway, Cuba

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STRUCTURAL SECTION,
COMISIÓN DE FOMENTO NACIONAL;
ING. LUIS SAENZ, Chief Engineer

Contractor: **CÍA CONSTRUCTORA AEDES**

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WASHINGTON OBSERVER

Homebuilding leaders are launching an all-out counter-attack to offset bad publicity from the growing ramifications of the housing investigations (See page 85). Builders, mortgage bankers, realtors all know that today's huge million-a-year homebuilding industry hinges on the government's guarantee of loans. Any serious blow to the insured mortgage system could knock homebuilding into a spin.

Top trade association executives are appearing before the congressional committees to get across the idea that only a tiny fraction of the industry is involved, and that the industry's record is one of giving more customers more house for their money.

Senator Capehart wants industry suggestions on safeguards to be written into the new housing law. Neither congressmen nor the Administration want to risk any drop-off in home building this year.

Housing scandal clearly ends the honeymoon of the homebuilding industry and the Eisenhower Administration. Now builders, lenders, and real estate men are hotly anti-Cole. They're bitter about how the situation was handled—beginning with the firing of FHA chief Hollyday.

•

The Administration now has a man keeping track of public works plans in order to get ready to pull the trigger on anti-recession measures.

Maj. Gen. J. S. Bragdon (now on leave as a vice-president of Vermilya-Brown, New York contractors) has a shop in the Council of Economic Advisors to ride herd on the blueprint makers—see that plans are prepared for expansion of roads, dams, public housing, hospitals, and other government buildings. He'll have three or four on his staff. Eisenhower has asked for a $35,000 appropriation from Congress to pay the freight.

•

The Libby Dam project in Montana is being revived. The U. S. will ask the International Joint Commission later this month for approval of construction of a dam and reservoir on the Kootenai River. The $250-million project already has been authorized by Congress. But because the dam would back water up into Canada, the IJC okay is needed.

•

A new approach for developing the Missouri River Basin is being proposed by Senator Hennings of Missouri. He wants Congress to set up an organization as substitute to the old Missouri Valley Authority idea. Hennings' plan: establish a Presidential commission to plan and administer federal agency activity in the basin; but also set up a parallel board controlled by 10 states which would have veto power on projects, financing and operations.

•

Any architect or architect-engineer firms who are interested in the A-E contract for the $125-million Air Force Academy should communicate as quickly as possible with the Assistant Chief of Staff, Installations, Air Force Academy Project Office, Headquarters, USAF, Washington, D. C.

•

A new labor board policy will narrow the NLRB's activity substantially. Road builders, and small construction firms and suppliers can look forward to getting out from under government direction in its labor matters. The board's policy would exempt from the board's jurisdiction labor cases that do not affect interstate commerce. Guidelines will be size of company and number of employes. Recent decisions on a carpenter's case and a county road case are the tip-offs.

Why more and more contractors are switching to

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Dual Purpose
GENERATORS

It's simply a matter of keeping up with the times . . . *and of bringing down your costs.* Now, in addition to all the cost-cutting, standard, universal power tools, new high efficiency, high cycle tools are moving in on the building scene. And with a Homelite Carryable Dual Purpose Generator, you get the high cycle power you need to operate these money saving tools . . . *plus 110 volt power for your standard electric hand tools and floodlights.*

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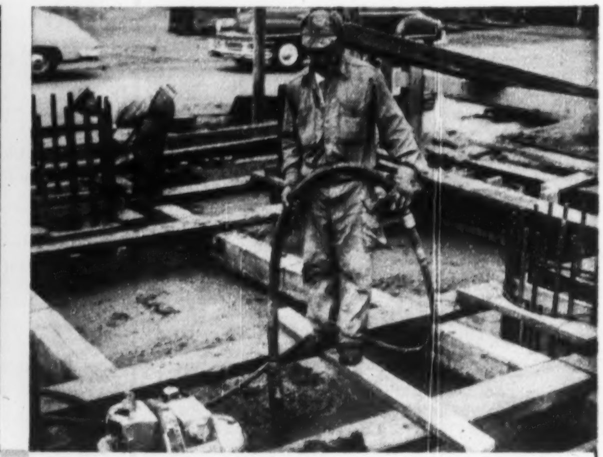

2. High cycle concrete vibrators operated by a Homelite dual purpose cuts labor costs in half. Only one man necessary for complete operation.

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APRIL 22, 1954

ENGINEERING NEWS-RECORD

State highway budgets climb 18% over last year's record

ENR survey finds most states have adequate revenue for meeting increased federal matching funds under new law

The nation's 48 state highway departments this year are scheduled to let $1.9 billion in contracts for free road construction—18% more than last year's all-time high—and they have earmarked a record $565 million for maintenance.

At least another $453 million will be available for roadbuilding contracts out of '54 toll highway funds. Although this amount now stands at 44% less than last year's, it is likely to be increased before the year is out as the fast-developing plans and financing of new toll road agencies mature. These plans are summarized in a separate article on this page.

• **Federal aid boost**—Brightening the outlook still further was passage last week of the federal highway aid bill authorizing total expenditures of $966 million annually for the fiscal years '56 and '57—including $700 million in state highway matching funds and $175 million for state work on interstate systems. (See page 26 for further details.)

Most states report to ENR that they can meet this increase in federal matching funds without having to seek additional revenue. Of 43 states replying on this point, 32 can meet the new commitment out of existing sources of revenue.

• **35 budgets increased**—The tabulation on the next page of budgeted outlays for free road construction, maintenance and equipment purchases by the 48 states shows that:

• Thirty-five states contribute to the overall 18% increase in funds budgeted for '54 road and bridge contracts. All regions of the country are up. It is noteworthy that states with the larger highway programs show big increases, ranging from 12% in California to 88% in Ohio. Pennsylvania is the chief exception, with a slight 1% dip.

• Budgets provide $514 million for maintenance by force account for a 4% increase over the '53 outlay. The $51 million earmarked for contract maintenance is 8% less than last year.

• Highway equipment purchases are set at $39.4 million, representing an 0.5% drop from '53. But, this dip can be offset by a total of $600,000 in equipment orders due to be placed by Maine, New Jersey and West Virginia toll road agencies. The New England and Far Western states have budgeted more for equipment this year; the Southern states are due to purchase 14% less; and the outlay is about the same as in '53 in other regions.

Highway construction contracts awarded the first three weeks of this month averaged more than $50 million per week—better than double the average weekly volume in March and 8% higher than April last year.

During the first quarter, highway bid prices were commonly 10% to 15% below engineering estimates (ENR April 8, p. 21). This gap is bound to narrow with the big upswing in highway awards that began this month. One state highway department, which has been making awards at 10% to 12% below estimates expects that by mid-year bids will be running about 3% to 4% below. In any case, some states already have picked up substantial savings that can be used to put additional work under contract this year.

• **Effect of new federal aid**—While 32 states reported present revenues adequate for meeting an increase in federal matching funds, nine of them conceded that the new commitment would limit funds available for 100% state construction work to some extent. Four states, for example, mentioned that their "betterment funds" might have to be cut.

The eleven states reporting that additional revenue would be needed to take advantage of increased matching funds are Massachusetts, New York, New Jersey, Delaware, West Virginia, Mississippi, Louisiana, Indiana, North Dakota, Montana and Nevada. A gas tax increase would be needed in Nevada, North Dakota and New York, and the latter two also would have to tap other sources. Part of N. Y.'s funds would come from a bond issue. N. D. would have to increase license fees and non-automotive levies.

Toll road work faces big upswing

There are toll road projects bearing a $1.5-billion price tag approaching the contract stage in six states, in addition to the $453 million of turnpike funds already budgeted. Chances are good that some of this pending work will go under contract in the third and fourth quarters.

Of the $453 million thus far budgeted for toll road work, $423 million is accounted for by turnpike authorities in six states and the other $30 million by five state highway departments (See table on next page). These funds are largely for completing the big programs that were in full swing last year.

Toll road maintenance expenditures are scheduled to increase by 14% (to $5 million) in five states, of which Pennsylvania accounts for $3 million and New Jersey, $1.5 million. Nearly all this maintenance is by force account.

Engineering plans and financing preparations are being expedited by the six state turnpike authorities with the $1.5 billion in new work coming up. Prospects for '54 lettings are particularly good in Massachusetts, Connecticut and Indiana.

The six upcoming toll highway projects are: Massachusetts, 123 mi, $240 million; Connecticut, 129 mi, $346 million; Florida, 110 mi, $62 million; Indiana (financing already complete), 156 mi, $280 million; Illinois, 280 mi, $450 million; and Kansas, 55 mi, $140 million.

Financing prospects for these projects are good. The market has recently shown itself very receptive to turnpike bonds, as evidenced by the recent Pennsylvania and New Jersey Turnpike issues.

The reason for this is that corporate financing has dropped off, while at the same time funds available for investment are piling up. This situation is expected to carry on for the rest of the year. Last week's reduction of the Federal Reserve Banks' rediscount rate, for the second time this year, indicates that monetary authorities are still solidly behind the "easy money" policy.

STATE HIGHWAY PROGRAM 1953-'54—NOT INCLUDING TOLL PROJECTS

As reported by State Highway Departments to Engineering News-Record

($ thousands, 000 omitted)

	CONTRACTS			MAINTENANCE By Own Forces			MAINTENANCE By Contract			TOTAL CONSTRUCTION AND MAINTENANCE			NEW EQUIPMENT		
STATES	**Put Under Contract 1953**	**Sched. for Contract 1954**	**% Change**	**1953**	**1954**	**% Change**	**1953**	**1954**	**% Change**	**1953**	**1954**	**% Change**	**1953**	**1954**	**% Change**
Maine	15,000	13,000	−13	10,400	9,651	− 7	....	....	....	25,400	22,651	−11	400	175	−56
New Hampshire	8,000	9,500	+19	5,000	4,200	−16	50	700	+1300	13,050	14,400	+10	200	200	0
Vermont	4,540	4,995	+10	3,699	4,115	+11	233	200	−14	8,472	9,310	+10	136	125	− 8
Massachusetts	55,000	65,000	+18	13,000	13,000	0	5,000	5,000	0	73,000	83,000	+14	1,500	2,000	+33
Rhode Island	5,600	14,000	+150	2,400	2,400	0	....	....	....	8,000	16,400	+105	75	170	+127
Connecticut	10,956	17,500	+60	8,500[f]	10,000[f]	+18	275[f]	300[f]	+ 9	19,731	27,800	+41	575[f]	1,200[f]	+109
NEW ENGLAND	**99,096**	**123,995**	**+25**	**42,999**	**43,366**	**+ 1**	**5,558**	**6,200**	**+12**	**147,653**	**173,561**	**+18**	**2,886**	**3,870**	**+34**
New York[f]	109,000	131,000	+20	29,000	30,000	+ 3	....	....	....	138,000	161,000	+17	2,000	2,000	0
New Jersey	26,188	29,307	+12	12,501	12,600	+ 1	450	550	+22	39,139	42,457	+ 8	725	775	+ 2
Pennsylvania	136,000	135,000	− 1	31,500	33,000	+ 5	....	....	....	167,500	168,000	+ 0.3	2,900	2,800	− 3
Maryland	34,500	71,000	+106	6,011	6,099	+ 1	....	....	....	40,511	77,099	+90	748	576	−23
D. C	10,922	7,000	−36	1,050	1,050	0	1,000	1,000	0	12,972	9,050	−30	92	208	+126
Delaware[f]	11,976	13,035	+ 9	2,268	2,267	− 0.04	551	551	0	14,795	15,853	+ 7	580	310	−47
MIDDLE ATLANTIC	**328,586**	**386,342**	**+18**	**82,330**	**85,016**	**+ 3**	**2,001**	**2,101**	**+ 5**	**412,917**	**473,459**	**+15**	**7,045**	**6,669**	**− 5**
Virginia	25,000	28,000	+12	6,300	5,500	−13	3,700	4,500	+22	35,000	38,000	+ 9	2,100	1,900	−10
West Virginia	10,500	10,000	− 5	14,000	14,000	0	2,000	2,000	0	26,500	26,000	− 2	70	50	−29
North Carolina	38,567	40,000	+ 4	29,500	29,500	0	....	....	....	68,067	69,500	+ 2	1,471	1,500	+ 7
South Carolina	24,640	25,000	+ 1	8,594	8,594	0	1,667	1,667	0	34,901	35,261	+ 1	1,000	1,000	0
Georgia	43,843	52,000	+19	7,816	8,000	+ 2	3,844	....	−100	55,503	60,000	+ 8	1,275	1,000	−22
Florida	28,000	55,000	+96	10,656	10,000	− 6	....	....	....	38,656	65,000	+68	500	125	−75
Alabama	30,000	40,000	+ 3	8,262	7,800	− 6	....	....	....	38,262	47,800	+25	1,800	1,000	−44
Mississippi	12,089	14,000	+16	4,881[f]	5,533[f]	+13	....	....	....	16,970	19,533	+15	621	625	+ 1
Louisiana	29,200	30,000	+ 3	15,300	15,000	− 2	300	300	0	44,800	45,300	+ 1	914	616	−33
Kentucky	30,628	33,878	+11	13,595	16,000	+18	2,970	4,000	+35	47,193	53,878	+14	482	1,000	+107
Tennessee	23,462	23,750	+ 1	11,500	11,300	− 2	....	....	....	34,962	35,050	+ 0.2	n. a.	n. a.	....
SOUTHERN	**295,929**	**351,628**	**+19**	**130,404**	**131,227**	**+ 0.6**	**14,481**	**12,467**	**−14**	**440,814**	**495,322**	**+12**	**10,233**	**8,816**	**−14**
Ohio	64,000	120,000	+88	23,750	24,000	+ 1	8,000	2,000	−75	95,750	146,000	+52	1,250	1,000	−20
Indiana	30,800	30,800	0	13,000	13,400	+ 3	....	....	....	43,800	44,200	+ 1	750	800	+ 7
Illinois	62,300	71,100	+14	20,500	27,300	+33	Included in own forces			82,800	98,400	+19	Included in own forces		
Wisconsin	40,000[1]	41,600[1]	+ 4	8,000	8,000	0	800	800	0	48,800	50,400	+ 3	Owned by counties		
Michigan	56,000	70,000	+25	6,617	6,918	+ 5	9,852	10,870	+10	72,469	87,788	+21	460	635	+38
MIDDLE WEST	**253,100**	**333,500**	**+32**	**71,867**	**79,618**	**+11**	**18,652**	**13,670**	**−27**	**343,819**	**426,788**	**+24**	**2,460**	**2,435**	**− 1**
Minnesota	33,800	33,400	− 1	11,000	11,000	0	3,600	3,600	0	48,400	48,000	− 1	634	600	− 5
Iowa	27,000[2]	50,000[2]	+85	9,953[f3]	9,500[f3]	− 5	Included in own forces			36,953	59,500	+61	615	500	−19
Missouri	51,000	56,000	+10	16,000	16,500	+ 3	....	....	....	67,000	72,500	+ 8	1,556	1,600	+ 3
Arkansas[4]	20,000	20,000	0	8,000	8,000	0	....	....	....	28,000	28,000	0	750	750	0
North Dakota	12,800	12,500	− 2	3,866	5,100	+32	200	300	+50	16,866	17,900	+ 6	343	400	+17
South Dakota	16,101	15,632	− 3	3,745	4,197	+12	1,500	2,093	+40	21,346	21,922	+ 3	550	700	+27
Nebraska	15,000	18,000	+20	6,000	7,000	+17	2,000	2,000	0	23,000	27,000	+17	....	....	....
Kansas	33,840	37,000	+ 9	8,997	9,331	+ 4	2,508	2,500	− 0.3	45,345	48,831	+ 8	875	880	+ 1
Oklahoma	21,700	21,000	− 3	9,373	8,145	−13	511	400	−22	31,584	29,545	− 6	1,100	500	−55
Texas	104,700	130,000	+24	34,700[f]	37,000[f]	+ 7	Included in own forces			139,400	167,000	+20	2,681[f]	3,500[f]	+31
Montana	11,562	12,000	+ 4	6,213	6,371	+ 3	276	300	+ 9	18,051	18,671	+ 3	217	450	+107
Wyoming	11,913	14,500	+22	2,774	2,858	+ 3	41	142	+246	14,728	17,500	+19	1,000	1,002	+0.2
Colorado	26,000	23,000	−12	4,800	7,000	+46	....	1,000	....	30,800	31,000	+ 1	500	200	−60
New Mexico	14,135[5]	14,105[5]	− 0.2	4,900	6,080	+24	700	600	−14	19,735	20,785	+ 5	627	400	−36
WEST OF THE MISSISSIPPI	**399,551**	**457,137**	**+14**	**130,321**	**138,082**	**+ 6**	**11,336**	**12,935**	**+14**	**541,208**	**608,154**	**+12**	**11,448**	**11,482**	**+0.2**
Idaho	13,143	22,012	+67	2,968	3,318	+12	350	900	+157	16,461	26,230	+59	514	563	+10
Utah	12,000	11,000	− 8	2,940[f]	3,750[f]	+28	....	....	....	14,940	14,750	− 1	341[f]	825[f]	+142
Arizona	14,800	16,000	+ 8	3,500	3,750	+ 7	....	....	....	18,300	19,750	+ 8	350	350	0
Nevada	7,440	8,030	+ 8	2,439	2,310	− 5	....	....	....	9,879	10,340	+ 5	325	350	+ 8
Washington	44,000	45,000	+ 2	10,688[f]	9,812[f]	− 8	1,467[f]	771[f]	−47	56,155	55,583	− 1	665[f]	600[f]	−10
Oregon	38,000	31,000	−18	9,300	9,000	− 3	1,600	1,600	0	48,900	41,600	−15	1,100	975	−11
California[f]	131,200	146,500	+12	24,700	24,500	− 1	290	500	+72	156,190	171,500	+10	2,300	2,500	+ 9
FAR WEST	**260,583**	**279,542**	**+ 7**	**56,535**	**56,440**	**− 0.2**	**3,707**	**3,771**	**+ 2**	**320,825**	**339,753**	**+ 6**	**5,595**	**6,163**	**+10**
UNITED STATES	**1,636,845**	**1,932,144**	**+18**	**514,456**	**533,749**	**+ 4**	**55,735**	**51,144**	**− 8**	**2,207,036**	**2,517,037**	**+14**	**39,667**	**39,435**	**−0.5**

[f] fiscal year [1] Plus 20% for engineering and r/w [2] Incl. both primary and farm to market [3] Incl. primary only [4] Same as '53 [5] Plus 10% for engineering

CONSTRUCTION PROGRAMS, TOLL ROADS, — By Turnpike, Parkway, Thruway Authorities or Commissions

ALL TOLL FACILITIES BUDGETED

	1953 Thousands	1954
By state hwy depts	$55,096	$29,670
By turnpike authorities	748,662	422,914
Total	**$803,758**	**$452,584**
Decrease in 1954		−44%

By state highway departments

	1953	1954
Maine	$2,000	......
New Hampshire	1,500	$10,000
Florida	2,000	4,670
Alabama	3,000	......
Mississippi	6,596	......
Kentucky	......	4,200
Missouri	......	800
California	40,000	10,000
Total	**$55,096**	**$29,670**
Decrease in 1954		−46%

By turnpike or thruway authorities

	1953	1954	Total Program
Maine Turnpike Auth.	$1,686	$25,000	
NY Thruway Auth	253,000	75,000*	$140,000
NJ Turnpike Auth	21,078	95,000	395,000
Highway Auth	140,000	35,000	
Pa. Turnpike Comm	48,500	150,000	250,000ᵡ
W. Va. Turnpike Comm.	72,204	7,914	132,000
Ohio Turnpike Comm, Proj 1	211,894	25,000	710,000†
Okla Turnpike Auth	300	10,000	150,000♯
Total	**$748,662**	**$422,914**	**$1,777,000**
Decrease in 1954		−43%	

* Tentative—neither plans nor financing are far enough along to make a firm budget possible at this time

† Proj 2 and spurs—feasibility studies just beginning

♯ Will offer bonds during 1954

ᵡ Northeastern extension only. Pennsylvania is planning 4 other extensions totalling $540 million

TOLL FACILITIES PLANNED, NOT YET BUDGETED

No contract budgets possible as yet — but feasibility studies, engineering plans and financing are far enough along that some 3rd or 4th quarter contracts may be expected.

	Total size of project Miles	Total size of project Thousands
Massachusetts	123	$240,000
Connecticut	129	346,000
Florida	110	62,000
Indiana	156	280,000Y
Illinois	280	450,000
Kansas	55	140,000
US Total on which some late 1954 contracts may be expected		**$1,518,000**

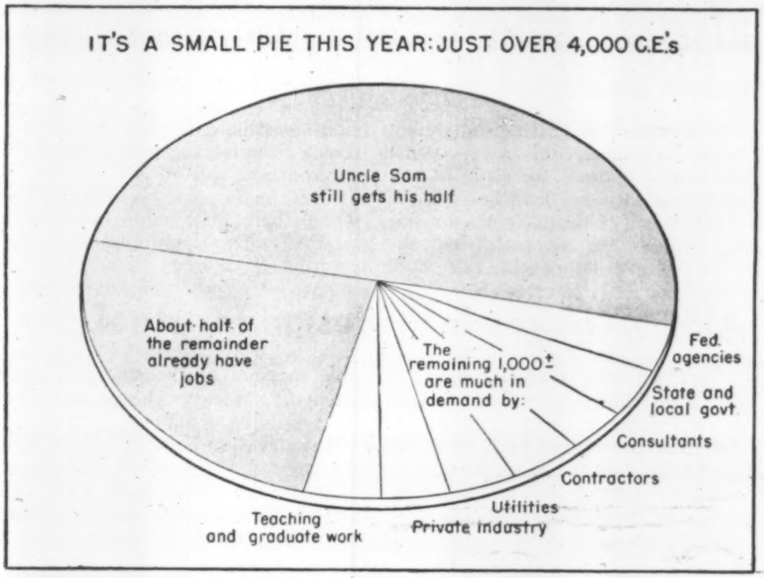
Y Bonds sold—legality questioned—may have to be readvertised

MAINTENANCE BUDGETS ON TOLL FACILITIES

	1953 Thousands	1954 Thousands
Maine Turnpike Auth.	$123	$130
NJ Turnpike Auth.	1,258	1,300
NJ Hwy Auth, by own forces	......	100
by contract	......	400
Pa Turnpike Comm	3,000	3,000
W Va Turnpike Comm by contr	......	30
Okla Turnpike Auth	37	80
Total Maintenance	**$4,418**	**$5,040**
Increase in 1954		+14%

Equipment purchases by toll authorities

	1953 Thousands	1954 Thousands
Maine Turnpike Auth.	$80	$5
NJ Hwy Auth		238
W Va Turnpike Comm.	3	350
Total equipment	**$83**	**$593**
Increase in 1954		+614%


IT'S A SMALL PIE THIS YEAR: JUST OVER 4,000 C.E.'s

Class of '54: Going fast

If you hope to hire engineering graduates out of the schools this year, you'd better get at it. It's a scramble.

This is the lean year, the year total output of accredited engineering schools dips to near 17,000—its lowest since 1946. Indications that graduates will pick up to 20,000, 26,000 and 30,000 in the next three consecutive years are small consolation in the face of a continuing annual demand estimated at 30,000. And it is no consolation for the employer needing graduates right now.

The pie chart above tells the general story about as it applies to civils. Adding fourth and fifth year men in 138 accredited civil and sanitary undergraduate curricula, you get 4,460. There are about another thousand enrolled in full-time graduate C.E. course, but for every advanced-degree man now becoming available for employment, a bachelor's degree winner is going back to his books for graduate study.

To get beneath the overall statistics, ENR picked a baker's dozen of engineering schools, choosing them for variety of type and for geographic distribution.

This is the picture as of last week, coast-to-coast, school-by-school, and area-by-area.

• **In the West**—The **University of California** will graduate 66 civil engineers. About 39 (60% of the class) will go directly into the armed services; 16 already have settled on jobs; five will go into graduate work. That left about half-a-dozen available, as of last week. About half of the graduates not going into the service go into state or local government employ. These governmental agencies are the most aggressive recruiters, and among the highest payers: City of Los Angeles offers $395 and State of California $376 a month for C.E. graduates with no experience. The federal government is in there pitching but can't meet salary competition. Recruiting is generally about as active as last year with pipeline constructors and private utilities also looking for men. Scholastic standing has no effect on job opportunities; most graduates will find jobs close to home.

The **University of Colorado,** at Boulder, has 28 in line for C.E. sheepskins. Only three of these have military service in their immediate future; half of the remainder already had settled on positions last week. With one man going after his master's, that left a dozen still available—and actively being sought by employers. It now looks as though about 15 will go into utilities or transportation; three to five will go to oil and aircraft companies; three will go into consultants' offices; two to contractors; and a couple to Civil Service. Few Colorado graduates find employment locally.

• **Southwest, Southeast**—In Dallas, Tex., **Southern Methodist** will graduate 12. Three will go into service; three to graduate work. Five of the remaining six already had jobs last week. Recruiting has been less active than in recent years, with private utilities and local governments doing the most active, and effective job. Contractors and consulting engineers followed the two leaders in numbers actually employed. Most graduates found work locally.

Seventeen of the **University of Florida's** 29 C.E.'s will go into the service. The other 13 have all found jobs locally. Recruiting, while less active than before, was done by federal agencies, local governments, consultants, and utilities—about in that order of activity. Scholastic standing of seniors reportedly had much bearing on their job opportunities.

North Carolina State College, at Raleigh, has 71 senior civils. Forty are eligible for the military; 12 have accepted employment. Those remaining are seeking employment, and being sought. Recruiting is less active for C.E.'s, but chemical and aircraft industries are interviewing. Federal agencies, contractors, local governments and consultants will get the largest numbers, about in that order. Scholastic standing is said to be an important consideration with employers.

• **Midwest—Illinois Institute of Technology** has only 12 civils graduating, and three expect to go into graduate work. Recruiting, about as active as in other years, began in March, and seniors will have an average of seven interviews before deciding on a position. The June graduates as a group would prefer working for consulting engineers who, in turn, are least active in recruiting. Apparently they believe that they can get the graduates when and as they want them. Indications are that the nine graduates will go to the various types of employers in this order: consultants, utilities, contractors, state and local government, federal government. Marks are important.

University of Notre Dame senior civils total 25. Nine will go to Uncle Sam; one or two to graduate work. Six already had jobs last week and the remaining eight or nine were being sought after more actively than was the case in recent years. Private utilities and private industry will get the greatest numbers of the graduates. State and local agencies, consultants, contractors and federal government follow in that order of preference among the graduates. Interviewers do stress scholastic standing.

Ohio State University in Columbus has 19 civils due to graduate from its four and five-year courses. Ten will go into service, and all the rest are signed up for jobs. Utilities, contractors, private industry, consultants and local government were successful recruiters in about that order. Federal agencies tried, but hired no one. The "best" companies sought the top students, but all students had ample opportunity.

• **Northeast—Pennsylvania State College** has a class of 38. With 19 to go into service, five settled on jobs and two destined for higher learning, there were a dozen shopping around last week. All but federal agencies were actively recruiting, with state and local agencies, utilities, contractors, and consultants having the most luck—in that order. Most graduates will locate in Pennsylvania.

Manhattan College in New York City, has 43 C.E.'s coming out, six of whom will go directly into the armed forces. Nine will enter graduate work, and 11 have settled on positions—that leaves 17 not yet signed up as of last week. Utilities and private industry will take the greatest numbers; local and federal governmental agencies are seeking their share. Recruiting has been less active this year with very little recruiting done by consultants and contractors. Few of the graduates who already have decided on jobs will go to work in the New York area.

Rensselaer Polytechnic Institute in Troy, N. Y., has 70 senior civils, but 60 will go to work for Uncle Sam—thanks largely to active ROTC units of all three service branches. Another three or four will go into graduate work, and five have jobs decided. That leaves next to nothing. Recruiting is possibly a little less active this year, but even those going into the service have been actively interviewing with the idea of making some commitment for the time when they return from service. Interviews for C.E.'s are, as usual, fewer than for M.E.'s E.E.'s and CH.E's. RPI reports practically no effort by contractors to recruit men. School authorities try to steer graduates to construction employment. But utilities and private industry are the leading recruiters and get a large percentage of the top men.

Massachusetts Institute of Technology in Cambridge, Mass., will give 42 bachelor's degrees to C.E.'s. Eleven will be commissioned upon graduation; 21 to 23 will go on to graduate study. This year an unusually high number, 13, are foreign students who do not enter the U. S. employment picture permanently. Those remaining free to take jobs were not yet committing themselves last week. They were shopping for best offers. Private utilities, consultants and private industries lead in recruiting efforts. In all but research and design lines, prospective employers look for a record of outside activities more than grades.

• **Conclusion**—There are definitely not enough engineers this year. What this survey showed for civils is generally true for other branches.

About half of the graduates not due for commissions or draft, had decided on jobs last week. The small remainder never had it so good. Pressure is on them to take jobs at salaries about the same or sometimes a bit higher than last year's offers. New types of employers are actively recruiting: Ohio's highway department, several turnpike authorities, and local governments.

One final point is clear. The schools have little or no information on their alumni returning from the service.

AISC explores limit design for steel

Two different approaches to limit design of steel structures were probed at an engineering conference of the American Institute of Steel Construction in Milwaukee last week.

Lynn S. Beedle, of the Fritz Engineering Laboratory, Lehigh University, described a plastic-design method by which a rapid prediction may be made of the maximum strength of statically indeterminate steel frames. He believes that it is much faster than an elastic analysis and gives a dependable measure of the true maximum strength. However, he pointed out, the possibility of failure by brittle fracture, fatigue and buckling still must be investigated.

Copper-lined test lab

To keep electromagnetic waves of external origin out of a testing chamber in General Electric's new sound test building, Pittsfield, Mass., the interior of the 68x58x60-ft-high anechoic room was completely lined with copper. Concrete, masonry and glass fiber are used in the chamber's 4½-ft-thick walls to keep the room almost totally free of outside radio interference and noise. Research in the chamber is expected to determine the amount of radio and TV interference created by transformers and other apparatus.

Studies are being made at Lehigh with the ultimate objective of developing specifications for plastic design. If successful, this would make possible a simple technique for proportioning safe structures, which would enable engineers to take advantage of the reserve strength of steel beyond the elastic limit.

A second approach was proposed by Prof. Joseph A. Wise, of the University of Minnesota. He contended that the factor of safety for overloading is applicable to live load only, since any increase in dead load is considered improbable.

Thus, he considers it would be a more rational procedure to assign allowable unit stresses of, say, 27,000 psi for dead load and 18,000 psi for live load.

Actually, allowable live-load stresses, Prof. Wise believes, should be based on the probability of overloading. For example, 18,000 psi might be used for bridges, 22,000 psi for office buildings and 15,000 psi for warehouses. An alternate procedure would be to use a set stress, say, 27,000 psi, but apply a variable safety factor to the loads. Bridge live loads might be multiplied by 1.5, office-building loads by 1.23 and storage-building loads by 1.8.

The conference also learned about a large-scale test to be made on steel truss bridge at Purdue University to determine ultimate carrying capacity and factor of safety with rivets and bolts. As described by C. H. Sandberg, assistant bridge engineer, Santa Fe Railway, and Prof. L. T. Wyly, of Purdue, the bridge will be a half-scale model of a 200-ft span railroad truss. The study may take from five to ten years.

The test has five sponsors: Association of American Railroads; Inland Steel Co; Wisconsin Bridge & Iron Co.; Russell, Burdsall & Ward Bolt and Nut Co., and Purdue.

Earthmovers move into Peoria

Fifth annual Earthmoving Industry Conference brings manufacturers and contractors together for shop talk

S. C. Jensen
Assistant Editor

At a few seconds after 9:30 am on Tuesday, April 13, a Mr. R. M. Smith stepped forward to microphone, tapped it twice, asked, "Is this thing working?" and thus spoke the first words at the fifth annual Earthmoving Industry Conference sponsored by the Central Illinois Section of the Society of Automotive Engineers, Inc.

Mr. Smith, general chairman of the conference, introduced Harald T. Reishus, vice president of the International Harvester Co. Mr. Reishus, who is rapidly becoming the "toastmaster general" of the construction industry, keynoted the conference in a speech in which he recalled the tremendous strides already made in earthmoving equipment and its application and the equally tremendous potential of such machinery in the future. In so doing, Mr. Reishus stressed the role that earthmovers will play in much-needed public works projects such as dams, flood control and highways.

• Equipment evaluation—The technical discussions opened with a paper presented by Kenneth F. Park, consultant engineer, Peterson Tractor & Equipment Co. Mr. Park's paper, "What the Contractor Wants in Earthmoving Equipment," began with the seemingly facetious statement that the average contractor wants a low first cost, prodigious performance, minimum downtime and maintenance and a high trade-in value when he's ready to dispose of it.

In the ensuing discussion Mr. Park said that the contractor really is entitled to these qualities—if low first cost is taken as a relative rather than absolute figure; if prodigious performance is viewed with an eye to overall quality rather than quantity; if minimum downtime and maintenance are qualified by proper design, service and use; and high trade-in value if the machine is of high quality and the manufacturer reliable.

Mr. Park then went on to show how all of these qualities can be achieved through adequate pre-evaluation of equipment. Citing two scraper units —manufacturer's names were omitted —Park showed how one machine, selling for $34,750 with a heaped capacity of 17.5 cu yds, compared with another selling for $40,000 with a heaped capacity of 23.0 cu yds. The first unit had an appetizingly lower first cost but in the final analysis—extended over a 10,000-hr life—the higher-priced machine would yield an extra $56,556 in earnings. Further, it was estimated that the first machine at the end of 10,000 hrs would bring only 27% of its original cost on a trade-in whereas the second machine was apt to be worth 40% of first price.

In making this analysis Mr. Park showed all too clearly the need for an entire plan or method by which two machines can be given a completely identical treatment for their analysis.

• Test program discussed—The afternoon sessions in Peoria opened at approximately the same time as the first baseballs of the 1954 season were being tossed onto the diamonds. The lure of the television screen, however, had little or no effect on attendance. The more than 500 people packed into the ballroom of the Hotel Pere Marquette heard reports on reserve tractive ability, vehicle drag tests codes and comparative demonstrations of test equipment. D. H. Heiple of the LeTourneau-Westinghouse Co. serving as technical chairman introduced H. L. Rittenhouse who presented "The Need for a Test Code and Its Objectives," T. Davidson, Bucyrus-Erie Co., who read "Discussion of Instrumentation" and P. Spennetta, Caterpillar Tractor Co. who gave "Results and Evaluation of Field Tests."

The object of the test program was, of course, to establish some basis for evaluating equipment on an industry-wide scale. For the manufacturer it means a standard for making competitive claims; for the contractor it offers a means of judging the various equipments available to him. Actual tests were conducted with the cooperation of the Engineer Research and Development Laboratories at Ft. Belvoir, Va.

• Show to decrease downtime—Next morning Douglas Erksine of the Allis-Chalmers Mfg. Co. called the third session to order and introduced J. W. Symonds, equipment superintendent for Peter Kiewit Sons Co. Mr. Symonds paper had been billed in the program as "Downtime!!!," but the three exclamation points gave only a slight clue to the importance the listeners were to place on the subject. Much of the talk would come as no surprise to hard-bitten contractors, but Mr. Symonds' revelation that contractors' servicing personnel are quite capable of pulling "boners" appeared to be news to a great many of those present. It was Symonds' contention that manufacturers have a responsibility in reducing downtime by making simple servicing foolproof and really simple. This could be done, he said, by making frequently replaced parts more readily accessible and by eliminating reversibility of parts in reassembly.

Mr. Symonds went on to say that downtown could be decreased in span and cost if all gear cases were provided with adequate and accessible drain and fill plugs and dip sticks where possible; engine drain plugs were kept accessible; lubrication points were minimized, oil filter elements were more interchangeable, 12-hr supply fuel tanks were standard; engines on small auxiliary equipment were "buyer's choice" to allow standardization; equipment was designed wherever possible to permit repair of each component without major dismantling; and if the number of bolt sizes were kept to a minimum.

The second half of the session was devoted to "Front-End Shovels in the Earthmoving Industry," a historical analysis presented by J. B. Codlin of the Tractomotive Corp.

• Engine requirements – Technical chairman for the afternoon session, R. D. Henderson of the Caterpillar Tractor Co., launched the discussion of "Engine Requirements for Earthmoving Equipment" with a paper prepared by K. M. Leech and J. A. Watts of the Cummins Engine Co. and read by Mr. Leech. The authors reported that trends seem to indicate that larger-size haulage units will be used more generally because of the economies obtained with them and lower gross vehicle weight per horsepower will be used because of longer life and greater performance obtainable.

These forecasts were questioned, however, by L. E. Burgess of the Mack Mfg. Co. who stated in a prepared discussion that 300 to 400 lbs of gross vehicle weight per horsepower seemed a fair average for construction equipment. Furthermore, he predicted that a fixed power-to-weight ratio could be established since load-carrying ability is paramount rather than speed or the ability to climb steep grades.

Attendance at this year's conference approached 1,000 as compared with 850 in 1953. This was due to the high quality of the papers presented but also, in part, to the fact that the registration fee was paid for by the Allis-Chalmers Mfg. Co., Caterpillar Tractor Co., Hyster Co. and the Le Tourneau-Westinghouse Co.

Congress fulfils highway chiefs' hopes

Billion-dollar aid bill eases matching provisions to spur interstate road work; authorizes several federal studies

Congress last week sent to the President a billion-dollar highway aid bill that goes just about as far as any measure possibly could at this time toward carrying out the long-term highway program of the Administration, the American Association of State Highway Officials and the Bureau of Public Roads.

Main provision of the new bill is an authorization of $875 million a year in state matching funds for fiscal '56 and '57—$300 million more than under the present law. Of this amount, $700 million is for work on the regular federal-aid system, with $315 million earmarked for primary routes, $210 million for secondary and $175 million for urban highways. The other $175 million is a greatly increased allocation for work on the interstate system. And this money for the interstate system is to be dispensed on a new basis that makes possible faster and more effective utilization of federal-aid funds for the main trunk-line routes.

• **New distribution formula** — Under the new law, money for work on the interstate system will be distributed among the states, half on a basis of population and half in accordance with the traditional formula that gives equal weight to three factors of area, population and post-road mileage. Apportioning half the funds on a population base will funnel that much of the money to places where traffic is heaviest and needs are greatest. Further, the new highway act sets up a more attractive 60-40 matching basis for interstate construction, in place of the regular 50-50 ratio of federal-state payments applying to other projects. This should induce the states to give first attention to interstate jobs.

States have somewhat less flexibility in use of federal-aid funds. The new law permits transfer up to 10% of primary, secondary and urban allocations among the three systems, as compared with 25% allowed in the present law.

• **Controversal amendments out**—Several House and Senate provisions were deleted from the final measure. Most important of these was a House proposal to make interstate aid dependent on continuation of the federal two-cent gasoline tax. This was the strongest effort yet made to tie highway aid to federal motor fuel taxation. It died a quiet death after Congress extended the two-cent levy in passing the excise tax law.

Also struck out was the Senate amendment—opposed by the Administration—that would have given the highway bill a "pump priming" aspect by authorizing the President to advance the funds one year. Likewise omitted was a Senate recommendation for adding $10 million to the present unused $50 million authorization for defense access roads.

Besides the $875 million in annual highway aid to the states, the bill authorizes for later appropriation $81 million a year for federally financed highways in forests, parks, parkways and other public lands. In addition, the measure contains authority for Congress to appropriate $2 million a year for fiscal 1955-56 for the Rama Road in Nicaragua ($4 million in all) and $8 million a year for five years of fiscal 1955-59 for the Inter-American Highway in Central America, a total of $8 million.

• **Federal activities strengthened**—Other important provisions of the new legislation call for:

- The Commissioner of Public Roads to study highway financing with special emphasis on toll roads and report his findings by Feb. 1, 1955.
- The Commerce Secretary to explore the legal and financial complexities of utility relocations on federal-aid projects and report not later than Feb. 1, 1955.
- The Secretary to engage in research in all matters affecting highways, independently or with others, and to use administrative and research funds for the purpose.
- The Secretary to submit legislative drafts for a codified federal highway act, with recommended changes in existing law, by Dec. 31, 1954.

Also the Secretary of Commerce is given power to approve connections of the federal-aid secondary system through urban areas. Final control by Department of Commerce over all construction on the secondary system is clearly reaffirmed by the bill, thus continuing without significant change the supervisory responsibility of the Bureau of Public Roads for work on these routes.

Radioactive water supply can be treated with clay

A cheap clay, found in almost unlimited quantities in such states as Arizona and Mississippi, is a new candidate for the work of decontaminating water supplies after an atomic attack.

William J. Lacy, a chemist from the Army Engineers' Research and Development Laboratory at Ft. Belvoir, Va., told a conference on atomic waste disposal at Baltimore last week that montmorillonite clay can be used to make contaminated water drinkable again—usually within a day.

The clay exhibits properties analogous to those shown by zeolites and synthetic ion exchange resins. While the theory of operation is complicated, basically it involves a capture of radioactive ions from water and their replacement by non-radioactive particles.

Investigators in the field of atomic waste, naturally, are studying a wide range of ion exchange materials. Montmorillonite clay, while not as efficient as some other materials, is considerably cheaper. Thus, it may be the best material to use for some types of decontamination.

Jobs in the news

SHOPPING CENTER—Contract for the construction of a $10-million, 100-store shopping center in Toledo, Ohio—to be known as the Miracle Glass Shoppers Mart—has been awarded to W. B. Gibson & Brothers, Warren, Ohio, by the Don M. Casto Organization, Columbus, Ohio, owners. C. Melvion Frank, Columbus, is architect and L. M. Shaffer, Worthington, is engineer.

APARTMENTS—A $6.5-million apartment project at Arlington, Va., will be built by M. T. Broyhill & Son, Arlington, with own forces. Corning & Morre, Washington, D. C., are architects.

PLANT—Contracts for plant, power house, utilities and parking areas for a new International Business Machines Corp. facility at Kingston, N. Y., have been awarded to Turner Construction Co., N. Y., and G. D. Campbell Bldg. Co., Inc., Poughkeepsie, N. Y. Unofficially estimated cost: $5 million. Giffel & Vallet, Inc., Detroit, Mich., is consulting engineers.

CHEMICAL PLANT—Design and construction of a $6-million acetylene derivatives plant at Calvert City, Ky., will be carried out by the Lummis Co., N. Y., for the General Aniline & Film Corp., N. Y.

AIRFIELD WORK—A $4.9-million, contract for hardstands, aprons, taxiway extension and hangar aprons at the Limestone Air Force Base, Limestone, Me., has been awarded to B. Perini & Sons, Inc., Framingham, Mass., by the Corps of Engineers, Boston.

75A
MICHIGAN

MICHIGAN *bucket control means*
"Bigger Loads . . . . . . FASTER"

Watch a MICHIGAN Tractor Shovel at work—with particular attention to bucket action—and you'll *see* how a MICHIGAN* will *handle bigger loads, move more yardage*—faster, at considerably lower cost.

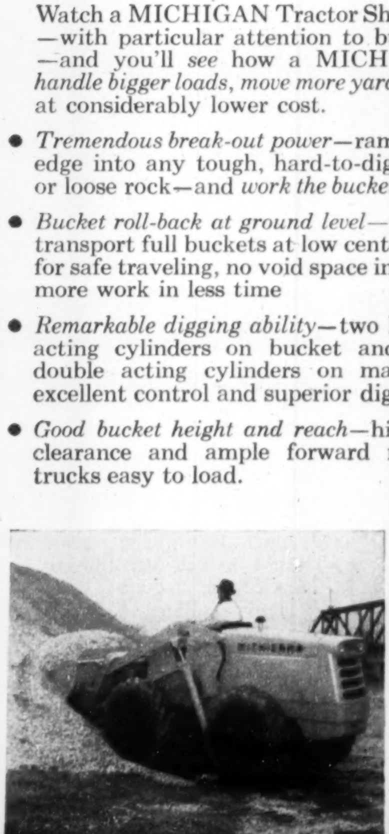
- *Tremendous break-out power*—ram the cutting edge into any tough, hard-to-dig clay, shale or loose rock—and *work the bucket* to loosen it
- *Bucket roll-back at ground level*—pick up and transport full buckets at low center of gravity for safe traveling, no void space in the bucket; more work in less time
- *Remarkable digging ability*—two large double acting cylinders on bucket and two large double acting cylinders on main lift give excellent control and superior digging action.
- *Good bucket height and reach*—high dumping clearance and ample forward reach make trucks easy to load.

Check these outstanding Quality Features of MICHIGAN* Tractor Shovels . . .

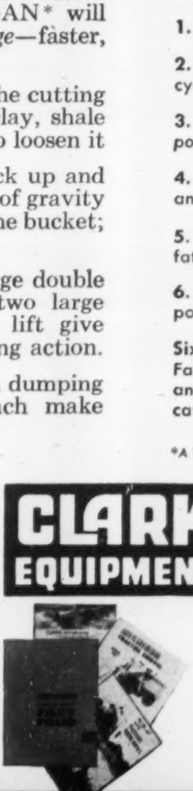
1. **Superior Bucket Action**—bigger loads, faster loading
2. **Clark Power-Shift Transmission**—faster operating cycle gets more yardage
3. **Clark Torque Converter**—3-to-1 torque multiplication; power when needed—no conventional clutch
4. **Clark Planetary Axle**—relieves torque load on shafts and gears, prolongs machine life
5. **Power Steering**—much easier handling, lessens driver fatigue
6. **Gas or Diesel**—right power for the job; more horsepower than any comparable machine

Six models: capacities from 15 cubic feet to 2¼ cubic yards. Facts about the MICHIGAN Tractor Shovel are important—and interesting. The MICHIGAN Fact Folio contains specifications and action photos. The coupon gets it for you.

A Trademark of Clark Equipment Company



CLARK EQUIPMENT



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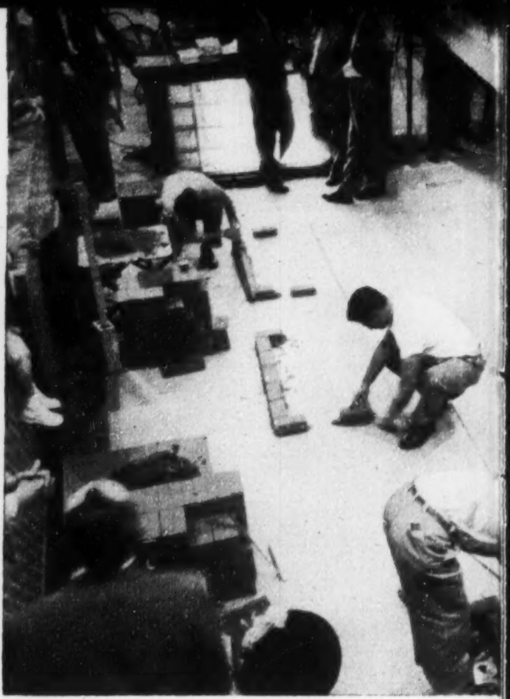
LABOR

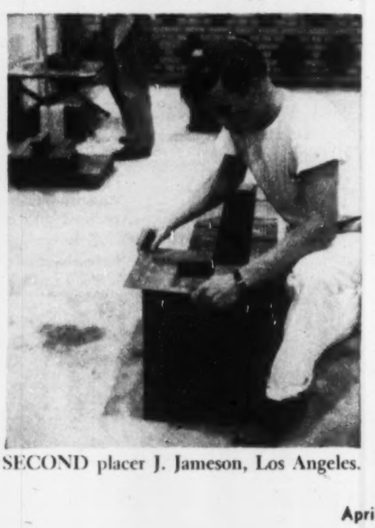
CROWD PULLER—Contest was big attraction at AFL Union Industries Exposition.



10-MINUTE BREAK—Contestant Joseph Cedrone, Quincy, Mass., unwinds between his two 55-minute work periods.

HARRY BATES, right, top man in bricklayers' union chats with Wm. Patterson, chief of U. S. Bureau of Apprenticeship.

WIVES were among fascinated onlookers.



SECOND placer J. Jameson, Los Angeles.

Novice bricklayers

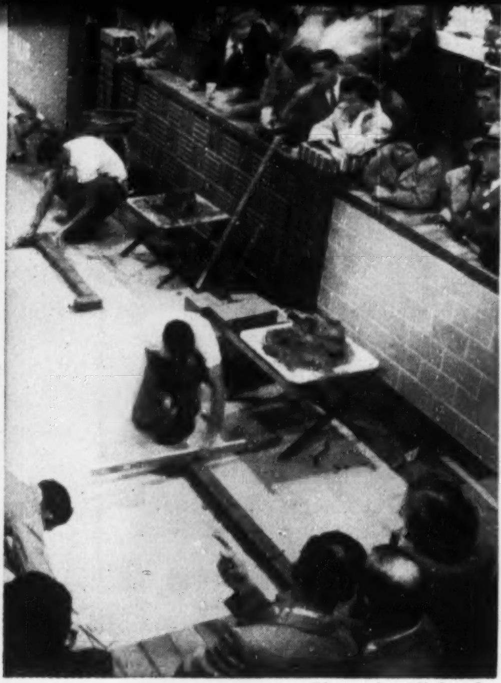
Bricklayers have been training apprentices, as any good mason will tell you, since the Tower of Babel was laid up. And it looks as though they'll be training them for a good many more years.

There've been some changes, of course; for one thing, the bricklayers' apprenticeship system has lost some of its exclusiveness; the guild of old has become the contractor-trade union team of today. For another, the growth of substitute materials has made necessary a close look at the methods, tools and substance of the bricklayer's craft.

A working example of union-industry cooperation was the annual National Bricklayer Apprenticeship Competition earlier this month in Los Angeles. Thirty apprentices, each with less than two years' time, had survived competition among an estimated thousand young bricklayers in 14 states and the District of Columbia. They competed at the American Federation of Labor Union Industries Exposition in a search for the national title.

But there was another purpose behind the contest. The Bricklayers, Masons and Plasterers International Union, smarting under criticism that membership has been restricted, joined six years ago with the Structural Clay Products Institute in staging a yearly contest to call attention to the apprenticeship program.

Harry C. Bates, dour international president of the bricklayers' union, is mighty proud of his craft's part in recruiting and training the huge construction work force needed for the



Photos by Clinkscales

get the build-up

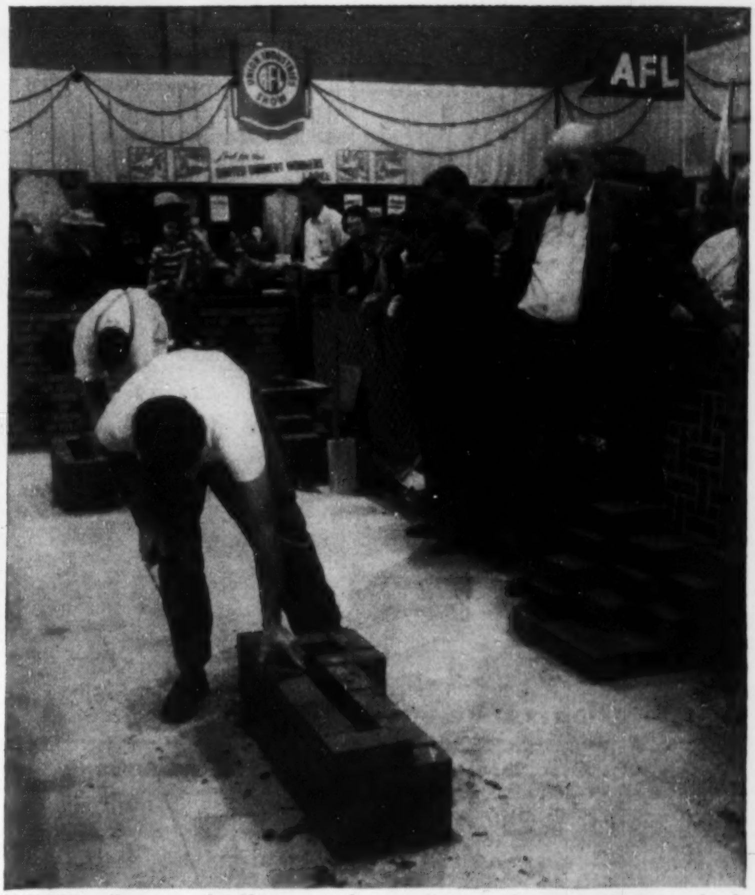
building surge of the last decade. "The bricklayers' union has rebuilt its ranks since World War II at a faster rate than any other construction trade," Bates claimed at a dinner for the competing apprentices.

Only about half of the apprentices in the average program complete their training. In the bricklayers' training system, however, about 98% of the apprentices finish their courses. This record of success, according to William Patterson, Director of the U. S. Bureau of Apprenticeship, who reported the figures, is the result of careful selection of bricklayer apprentices, good relations between contractors and union locals in joint apprenticeship committees, and effective union discipline.

The present brickmason training plan, made by the union and the Associated General Contractors, was approved in 1945 by the Apprenticeship Bureau, a branch of the U. S. Department of Labor. The bureau sets standards for apprentice programs, promotes their adoption, acts as coordinator and adviser in setting up and running training plans. The construction industry has by far the biggest apprentice training operation.

Most construction trades are training one recruit for each journeyman who drops out of the trade.

Now the bricklayers are training 1.5 apprentices for each lost journeyman. That's a drop from their two-to-one ratio of 1949. The ratio is evening out in the other construction crafts too, indicating that the building trades are coming to full force.



JUDGES, all veteran bricklayers, rated apprentices on layout, uniformity, plumb, and handling of tools as they built piers from blueprints. Speed was not a big factor.

WINNER AND WIFE—Bob Ohran, 21, of Palo Alto, Calif., is member of San Jose local. Bricklaying is a way of life for him. Father and six uncles are masonry contractors.

WEATHER

Observed weather in 20 cities, compared with normals

	Precipitation, inches				Temperature, degrees			
City	Mar. 1954	Departure fr. normal	3 mos. 1954	Departure fr. normal	Mean Mar. '54	Departure fr. normal	Av. daily Maximum	Av. daily Minimum
Atlanta	3.07	−2.60	8.87	−3.54	53.1	+0.4	63.5	42.6
Baltimore	3.96	+0.33	7.19	−3.09	41.9	−1.3	52.1	31.6
Birmingham	3.51	−2.80	13.23	−3.23	53.4	−0.8	65.3	41.5
Boston	3.33	−0.10	9.96	+0.10	38.8	+1.2	46.7	30.9
Chicago	5.00	+2.15	8.50	+2.40	35.0	−2.0	43.0	27.0
Cincinnati	4.07	−1.66	8.37	−3.37	41.0	−2.3	50.7	31.3
Cleveland	6.07	+3.18	9.18	+4.68	35.1	−1.7	43.6	26.6
Dallas	0.59	−2.22	4.32	−3.58	56.5	−0.9	68.1	44.9
Denver	0.30	−0.94	0.51	−1.79	36.3	−3.0	47.8	24.7
Detroit	3.87	+1.34	9.04	+2.40	33.5	−1.6	41.3	25.7
Kansas City	1.62	−0.89	3.42	−1.68	41.7	−2.1	51.8	31.5
Los Angeles	2.99	+0.63	10.57	+2.46	57.0	−1.9	65.0	49.0
Minneapolis	2.10	+0.62	2.67	−0.50	27.9	−3.0	35.9	19.9
New Orleans	2.94	−3.62	8.60	−6.92	61.1	−1.9	69.5	52.6
New York	3.02	−0.54	6.42	−3.73	41.2	+0.5	48.4	34.0
Philadelphia	3.78	+0.41	7.39	−2.40	43.0	−0.5	51.2	34.8
Pittsburgh	4.32	+0.91	8.01	−1.17	39.6	−2.0	45.0	28.0
St. Louis	1.10	−2.54	3.23	−4.61	43.2	−2.1	52.9	33.5
San Francisco	4.56	+1.78	10.09	−0.63	52.1	−0.3	57.0	47.1
Seattle	2.08	−0.98	16.03	+4.74	44.6	−2.4	51.9	37.3

THE 30-DAY FORECAST of the U.S. Weather Bureau for the period mid-April to mid-May calls for temperatures to average below seasonal normal from the central Rocky Moutain area eastward to the Mississippi. Above normal temperatures are predicted along the Pacific Coast and also in the Southeast, while near normal values are expected in areas not specified above.

Precipitation is predicted to be subnormal over most areas west of the Continental Divide but above normal rainfall is indicated over a broad area comprising the Gulf States, Mississippi and Ohio valleys and the Middle Atlantic States. Near normal precipitation is expected in other areas.

Precipitation range in 20 cities, in inches

Table shows range observed 33.3% of time. Rainfall heavier 33.3% of time, lighter 33.3% of time.
Computed by U. S. Weather Bureau (based on historical records of actual precipitation)

City	April	Mid. Apr.-Mid. May	May	Mid. May-Mid. June	June	Mid. June-Mid. July	July	Mid. July-Mid. Aug.	Aug.	Mid. Aug.-Mid. Sept.	Sept.	Mid. Sept.-Mid. Oct.	Oct.	Mid. Oct. Mid. Nov
Atlanta	2.82/5.10	2.48/4.72	2.14/4.33	2.50/4.38	2.87/4.43	2.93/4.62	2.99/4.80	2.89/4.90	2.79/5.00	2.24/4.30	1.69/3.60	1.64/3.25	1.59/2.90	2.01/3.35
Baltimore	2.58/4.20	2.76/4.30	2.94/4.40	2.73/4.42	2.52/4.44	2.57/4.71	2.61/4.98	2.91/5.32	3.20/5.66	2.65/4.51	2.10/3.36	1.88/3.57	1.66/3.77	1.61/3.44
Birmingham	2.94/5.07	3.05/4.81	3.16/4.55	2.90/4.70	2.64/4.84	3.29/5.18	3.94/5.53	3.44/5.39	2.92/5.25	2.32/4.47	1.71/3.69	1.62/3.14	1.52/2.58	1.84/3.24
Boston	2.39/4.40	2.58/4.29	2.76/4.18	2.42/3.84	2.09/3.50	2.35/3.76	2.61/4.02	2.60/4.36	2.59/4.70	2.32/4.20	2.04/3.70	2.26/3.88	2.49/4.07	2.62/4.26
Chicago	2.19/3.13	2.24/3.56	2.16/4.00	2.29/3.88	2.42/3.67	2.46/3.66	2.49/3.65	2.31/3.65	2.13/3.65	2.11/3.70	2.09/3.75	1.85/3.42	1.59/3.10	1.59/2.95
Cincinnati	2.34/3.60	2.42/3.85	2.49/4.10	2.59/4.30	2.69/4.50	2.54/4.10	2.39/3.70	2.32/3.95	2.24/4.20	2.02/3.64	1.79/3.08	1.64/2.99†	1.49/2.90	1.74/3.28
Cleveland	2.20/3.27	2.27/3.38	2.33/3.49	2.17/3.53	2.00/3.56	2.24/3.82	2.47/4.08	2.15/3.84	1.83/3.60	2.07/3.51	2.30/3.41	2.03/3.29	1.74/3.16	1.79/2.97
Dallas	2.66/5.50	2.82/5.38	2.99/5.25	2.39/4.85	1.79/4.45	1.59/3.72	1.39/3.00	1.30/2.89	1.22/2.78	1.50/2.94	1.77/3.10	1.66/3.30	1.55/3.50	1.60/3.25
Denver	1.34/2.40	1.48/2.65	1.62/2.90	0.64/2.32	0.67/1.75	0.94/1.88	1.21/2.00	1.04/1.86	0.87/1.73	0.60/1.39	0.52/1.05	0.57/1.08	0.62/1.10	0.46/0.89
Detroit	1.79/2.73	2.14/3.20	2.49/3.67	2.66/3.88	2.84/4.10	2.46/3.90	2.09/3.70	1.94/3.54	1.79/3.38	1.80/3.41	1.82/3.44	1.72/3.02	1.63/2.60	1.70/2.66
Kansas City	2.39/3.40	2.82/4.40	3.24/5.40	3.42/5.82	3.61/6.25	3.19/5.47	2.77/4.69	2.74/4.84	2.70/5.00	2.84/5.00	2.99/5.00	2.34/4.54	1.69/4.07	1.48/3.21
Los Angeles	0.22/0.90	0.14/0.62	0.05/0.35	0.02/0.18	0.00/0.02	0.00/0.01	0.00/T	0.00/T	0.00/T	0.00/0.02	T/0.03	0.08/0.32	0.15/0.60	0.20/0.95
Minneapolis	1.69/2.60	2.16/3.29	2.64/3.98	2.89/4.49	3.14/5.00	2.64-4.50	2.14/4.00	2.16/3.85	2.19/3.70	2.24/3.78	2.29/3.85	1.79/3.15	1.29/2.45	0.98/2.01
New Orleans	2.66/5.00	2.65/5.12	2.64/5.25	3.18/5.88	3.72/6.50	4.54/6.95	5.37/7.40	4.90/7.08	4.44/6.75	3.78/6.12	3.11/5.50	2.55/4.81	1.99/4.12	2.34/4.40
New York	2.47/3.78	2.50/3.90	2.54/4.02	2.45/3.91	2.36/3.80	2.81/4.25	3.26/4.70	2.99/4.95	2.72/5.20	2.46/4.30	2.21/3.40	2.15/3.76	2.09/4.13	2.15/4.04
Philadelphia	2.40/3.82	2.44/4.11	2.39/4.40	2.54/4.25	2.69/4.10	2.94/4.24	3.19/4.37	2.99/4.91	2.79/5.45	2.44/4.62	2.09/3.90	2.04/3.85	1.99/3.80	2.18/3.65
Pittsburgh	2.29/3.40	2.39/3.58	2.49/3.75	2.68/3.98	2.86/4.20	2.79/4.35	2.72/4.50	2.52/4.15	2.32/3.80	2.20/3.30	1.87/2.80	1.98/3.00	2.09/3.20	1.96/2.98
St. Louis	2.59/4.10	2.86/4.65	3.13/5.20	2.96/5.25	2.79/5.30	2.60/4.78	2.41/4.25	2.28/4.18	2.14/4.11	2.12/3.84	2.09/3.58	1.89/3.42	1.69/3.25	1.78/3.28
San Francisco	0.67/1.54	0.44/1.12	0.18/0.69	0.09/0.37	0.00/0.05	0.00/0.03	0.00/0.01	0.00/0.00	0.00	0.00/0.13	0.00/0.26	0.10/0.78	0.19/1.20	1.12/2.25
Seattle	1.64/2.90	1.53/2.45	1.42/2.00	1.09/1.86	0.76/1.73	0.48/1.20	0.19/0.67	0.18/0.78	0.18/0.90	0.62/1.55	1.07/2.20	1.70/2.85	2.32/3.50	3.07/4.55

T—Traces (Less than 0.005 inches) † Lexington

Mean temperature range in 20 cities, in degrees F.

Table shows range observed 25% of time. Mean temperature higher 37.5% of time, lower 37.5% of time.
Computed by U. S. Weather Bureau (based on historical records of actual temperature)

City	April	Apr.-Mid. Mid. May	May	Mid. May-Mid. June	June	Mid. June-Mid. July	July	Mid. July-Mid. Aug.	Aug.	Mid. Aug.-Mid. Sept.	Sept.	Mid. Sept.-Mid. Oct.	Oct.	Mid. Oct. Mid. Nov.
Atlanta	60.9/62.6	64.9/66.5	69.0/70.5	73.5/74.6	77.3/78.1	78.5/79.3	79.0/79.9	78.9/79.9	78.0/79.1	76.3/78.1	72.9/75.4	68.2/70.2	62.3/63.8	56.6/58.2
Baltimore	51.9/53.6	57.5/59.0	63.4/64.6	68.2/69.5	72.5/73.8	75.2/76.6	76.2/77.5	75.5/77.3	73.6/75.7	71.1/73.3	67.1/69.4	62.2/64.4	56.4/58.3	50.9/52.6
Birmingham	61.1/62.6	64.6/66.3	68.4/70.2	72.4/74.5	76.8/78.1	78.4/79.7	78.9/80.0	79.0/80.3	78.5/79.8	76.6/78.5	73.3/75.6	68.5/70.7	62.2/64.2	56.2/58.5
Boston	46.7/48.3	51.5/53.1	56.7/58.4	56.8/58.6	66.3/68.1	69.6/71.1	71.7/73.0	72.1/73.4	70.9/72.1	67.6/69.2	63.3/65.4	58.9/61.0	54.2/56.2	49.3/51.3
Chicago	47.5/48.8	52.7/54.7	57.9/60.5	63.1/66.1	68.0/71.2	71.6/74.0	73.7/75.1	73.8/75.4	72.0/73.7	68.8/70.7	64.5/66.7	59.3/61.7	52.8/55.3	45.9/48.6
Cincinnati	51.4/53.3	56.4/58.6	61.5/64.0	66.7/68.9	71.2/73.0	73.4/75.2	74.1/75.8	73.9/75.7	72.5/74.4	70.2/72.1	66.5/68.4	61.2/63.3	54.9/57.1	48.6/50.9
Cleveland	46.2/47.8	51.8/53.9	57.9/60.3	63.5/65.7	68.2/70.2	71.2/73.0	72.7/74.2	72.5/74.2	70.9/72.7	68.5/70.6	64.7/67.1	59.5/61.8	53.5/55.6	47.1/49.3
Dallas	64.2/67.3	68.4/71.1	72.8/75.0	77.2/78.8	81.1/82.2	83.3/84.6	84.5/86.4	85.6/87.3	85.1/86.7	82.3/83.9	78.1/79.7	73.8/75.1	68.5/69.4	61.4/63.1
Denver	46.3/48.6	51.1/53.4	55.2/57.4	60.0/62.1	65.4/67.5	69.7/71.5	72.1/73.7	72.5/74.0	70.8/72.2	67.3/68.6	62.2/63.4	56.7/58.3	50.8/52.8	44.5/47.2
Detroit	45.6/47.1	51.0/52.8	56.5/58.7	62.3/64.4	67.3/69.4	70.6/72.1	72.5/73.5	72.3/73.6	70.5/72.0	67.5/69.5	63.0/65.6	57.8/60.2	51.9/54.1	45.8/47.9
Kansas City	54.9/56.7	59.9/61.7	64.6/66.4	69.4/71.2	74.2/76.0	78.0/79.6	80.0/81.5	80.2/81.8	78.4/80.1	74.6/76.6	69.7/71.9	64.4/67.0	58.1/61.2	50.7/53.9
Los Angeles	58.1/59.7	59.8/61.3	61.4/62.8	62.5/64.0	63.9/65.4	65.4/67.0	66.9/68.4	67.5/68.9	67.4/68.6	66.8/68.1	65.9/67.3	64.4/65.9	62.7/64.2	60.5/62.1
Minneapolis	44.7/47.9	51.3/54.4	57.2/60.2	62.2/64.9	66.6/69.1	70.3/72.5	72.9/74.9	73.2/75.0	70.8/72.3	66.3/68.4	61.0/63.6	55.5/58.3	48.8/51.7	40.6/40.3
New Orleans	67.4/69.1	70.7/72.1	73.8/74.9	77.0/78.1	79.9/80.9	81.0/81.9	81.4/82.3	81.8/82.7	81.8/82.7	80.8/81.9	78.5/79.7	75.1/76.5	70.5/71.9	64.6/66.8
New York	49.0/51.0	54.6/56.3	60.6/62.1	65.9/67.5	70.4/72.2	73.6/75.0	75.2/76.3	75.1/75.5	73.6/74.9	71.0/72.5	67.4/69.0	62.7/64.3	57.0/58.6	51.8/53.2
Philadelphia	50.8/52.6	56.2/58.0	62.3/64.0	67.5/69.2	71.5/73.1	74.1/75.4	75.5/76.6	75.1/76.3	73.3/74.5	70.6/72.1	66.8/68.5	61.6/63.5	55.6/57.6	50.3/52.3
Pittsburgh	48.0/49.8	53.1/55.1	58.7/60.9	63.5/65.8	67.4/69.7	70.2/72.0	71.4/72.8	71.0/72.4	69.3/70.9	67.2/68.9	64.0/65.9	58.8/60.9	52.0/54.4	46.2/48.2
St. Louis	54.5/57.0	58.4/61.9	64.0/66.6	68.7/71.5	73.5/76.2	76.9/79.0	78.7/80.2	78.5/80.1	76.7/78.5	73.6/75.6	69.1/71.2	64.0/6.63	58.1/60.5	51.0/53.9
San Francisco	53.2/55.0	54.3/55.9	55.9/57.4	57.5/59.1	58.8/60.5	59.6/61.0	59.7/60.9	59.5/60.7	60.1/61.2	60.9/62.2	61.3/62.8	60.4/62.0	58.5/60.2	57.9/59.9
Seattle	48.2/49.9	51.0/52.9	54.2/56.3	56.9/58.5	59.3/60.4	61.7/62.7	63.6/64.6	63.8/65.0	62.7/64.1	60.8/62.0	58.0/59.0	54.8/56.1	51.0/52.5	41.8/43.3

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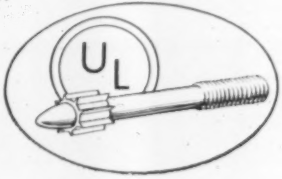

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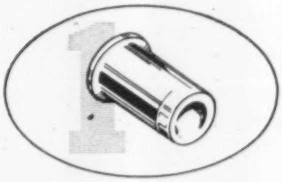

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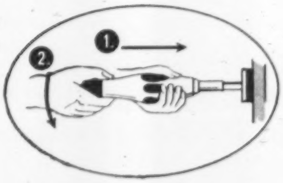

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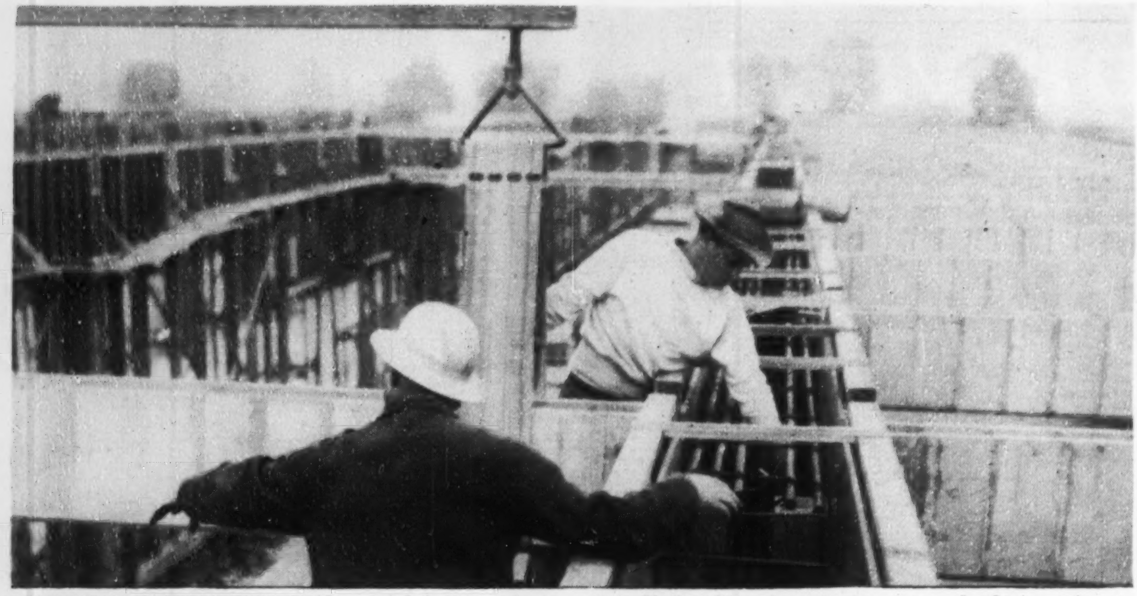


CONTINUOUS CONSTRUCTION, as used for a warehouse roof in Shelby, Ohio, is an important new development for prestressed block beams. When girder forms are filled, beams will be made continuous.

New designs cut prestressed block-beam cost

Ross H. Bryan
Consulting Engineer
Nashville, Tenn.

Spectacular progress is being made in design and construction with prestressed beams composed of machine-made concrete block. Applications are being broadened and cost reduced.

During the last four years, cost of fabricating block beams has been cut, on the average, about 33%. In that period, 65 prestressed concrete structures have been built, requiring block beams for 2,200 lin ft of bridge slabs, 926,000 sq ft of floor and roof construction and 6,000 stadium seats. As experience was gained, design and fabrication methods were improved and less expensive anchorages developed for the prestressing steel.

• Block beams made continuous—The most important design improvement is a method for establishing continuity. Precast, prestressed members are erected as simply supported beams, then made continuous with cast-in-place concrete. To resist tensile stresses due to negative bending moments, reinforcing bars are placed on top of the beams at supports and encased in the cast-in-place concrete. As a result, the beams will be continuous under live load. Since the continuity steel is simple to place, this method is much cheaper than field prestressing and offers, at low cost, the advantages of continuous construction over simple-beam.

A good example of the application of this technique is the one-story warehouse being built for the U. S. Air Force at Shelby, Ohio. Newest addition to the Wilkins Air Force Depot, the $5-million building is 2,000 ft long, 400 ft wide and 24 ft high, divided by 12-in.-thick masonry firewalls into ten 200x400-ft sections.

In submitting the low bid, the general contractor, Geo. W. Lathrop & Sons, Inc., Toledo, based its price on an alternate design proposed by Concrete Masonry Corp., Elyria, Ohio. The alternate substituted prestressed, precast joists for cast-in-place members.

Roof framing consists of rigid frames of reinforced concrete on 67-ft spans, which support a total of 2,760 continuous prestressed block beams on 33-ft spans. Lathrop reports the factory-fabricated joists eliminated four field operations: construction of formwork, placing of reinforcing steel, casting of concrete and form stripping. Also, by speeding erection, this design made possible completion of the large roof several months quicker than by the usual methods.

The joists are composed of 8x8½ by 17⅝-in.-deep machine-made concrete blocks (limestone aggregate), with a compressive strength of 4,000 psi. In the Elyria plant, 60 miles northwest of the job site, the joists were fabricated by buttering the blocks with mortar and placing them side by side. Then, the blocks were tied together with tensioned bridge strands placed in hollows in the block. From four to six ⅜-in. dia. 7-wire strands were required for each joist. Each tendon was tensioned to 12,000 lb, 60% of the ultimate tensile strength.

Prestress was transferred initially from steel to concrete by end anchorages. However, bond between steel and concrete was established later by pressure grouting.

When erected in the building, each prestressed joist was seated in a slot in the side of the girder forms. To make the joists continuous, reinforcing steel for negative moment was placed across the girder, with ends resting in troughs atop the joists. Then, concrete was placed in the girder and troughs in one operation.

The joists are supported laterally by precast concrete struts, which have a steel angle at each end where they bear on the beams. A steel plate, field welded to the angles of adjoining struts, ties the members together.

Lathrop estimates that precasting eliminated 400,000 sq ft of formwork, casting of 4,200 cu yd of concrete on the site and setting of 450 tons of reinforcing steel in the forms.

• Evolution of new design—The technique adopted for the Shelby warehouse evolved from that used for the first prestressed concrete bridge in the U. S. Built in 1950, in Madison County, Tenn., about 15 miles north of Jackson, this pioneer structure has 20 and 30-ft spans consisting of a cast-in-place concrete deck carried on prestressed beams placed side by side (ENR Jan. 18, 1951, p. 39). The beams were fabricated of 8x16-in. by

12-in.-deep, machine-made, hollow concrete blocks, with tensioned bridge strands placed inside the cores. The tendons were anchored at the ends of the beams by tightening a nut on a threaded swaged fitting.

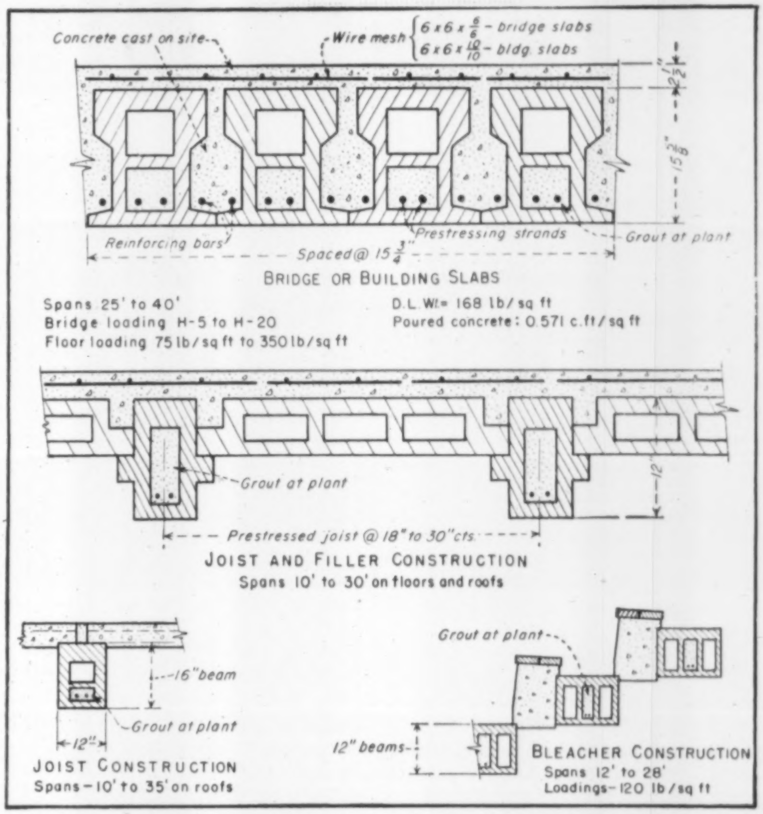
To cut costs and eliminate certain disadvantages inherent in this design, changes were made during the next year (ENR March 20, 1952, p. 52). Instead of being strung through the block hollows, strands were wrapped around the outside of the beams and anchored only at one end, thus cutting down on end fittings and bearing plates required. When the beams were positioned in a structure and the top deck poured, concrete was placed at the same time between the beams, providing additional anchorage by bond with the strands. Not only did bonding the tendons to the concrete protect the steel against corrosion, but it increased the ultimate strength of the beam and decreased the size of cracks caused by heavy overloading.

• **Bridge costs cut**—In the following two years, other changes became necessary to improve further the technique and cut costs. Besides the scheme for establishing continuity, a method has been developed for obtaining additional economy with bridge slabs composed of block beams placed side by side. The technique calls for insertion of reinforcing steel in keyways between prestressed beams to supplement the prestressing strands.

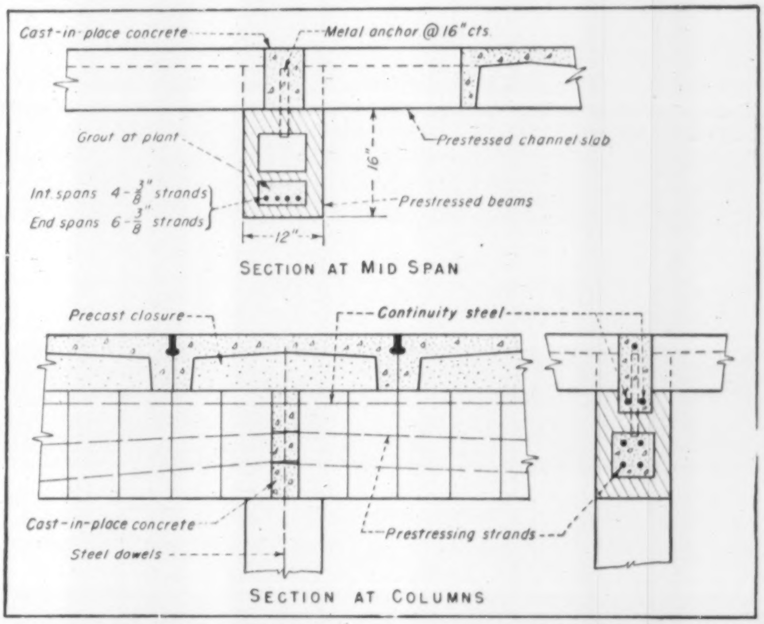
The method is advantageous when strands cannot be utilized at full allowable tension. For greatest economy, enough strands are used at the allowable tensile stress so that the total force is equal to or less than the prestressing force required to control cracking. Reinforcing steel then is employed to build up to the desired ultimate moment. When this is done, however, it is necessary to check the cracking load carefully.

• **Anchorage costs decreased**—Another source of cost reduction is the anchorage of the tendons. Experimental work on this has been carried out during the last four years in the plant of Nashville Breeko Block Co.

These efforts have made clear that each type of anchor requires a different tensioning procedure, and the cost of tensioning must be regarded as an integral part of the cost of the end fitting on the strands. In general, fittings tested have been of two types—those applied in the factory where the strands are made, and those applied in the plant where the prestressed block beams are made.


Concrete cast on site
Wire mesh
6 x 6 x 6/6 – bridge slabs
6 x 6 x 10/10 – bldg. slabs
2 1/2"
15 3/8"
Reinforcing bars
Prestressing strands
Grout at plant
Spaced @ 15 3/4"
BRIDGE OR BUILDING SLABS
Spans 25' to 40'
Bridge loading H-5 to H-20
Floor loading 75 lb/sq ft to 350 lb/sq ft
D.L. Wt = 168 lb/sq ft
Poured concrete: 0.571 c.ft/sq ft
Grout at plant
12"
Prestressed joist @ 18" to 30" cts.
JOIST AND FILLER CONSTRUCTION
Spans 10' to 30' on floors and roofs
16" beam
Grout at plant
12"
JOIST CONSTRUCTION
Spans – 10' to 35' on roofs
Grout at plant
12" beams
BLEACHER CONSTRUCTION
Spans 12' to 28'
Loadings – 120 lb/sq ft

HOW PRESTRESSED BLOCK BEAMS are employed in four types of construction.

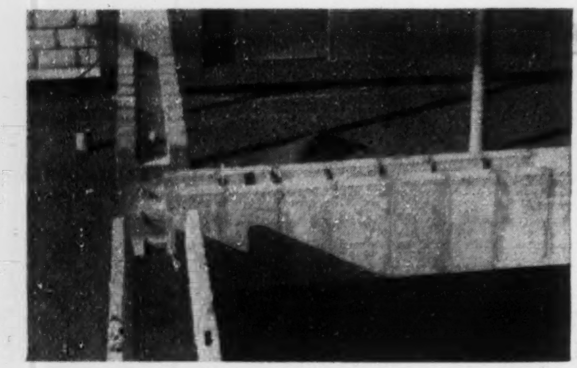

Cast-in-place concrete
Metal anchor @ 16" cts.
Grout at plant
Prestressed channel slab
16"
Int. spans 4 – 3/8" strands
End spans 6 – 3/8" strands
Prestressed beams
12"
SECTION AT MID SPAN
Precast closure
Continuity steel
Cast-in-place concrete
Steel dowels
Prestressing strands
SECTION AT COLUMNS

PRESTRESSED CHANNEL SLABS are supported on block beams in the roof of a warehouse in Nashville, Tenn. Beams are doweled to columns and made continuous to support live loads.

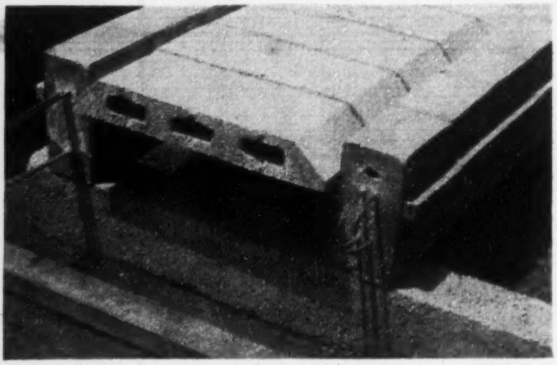
Strands with factory-applied fittings must be prefabricated in accordance with shop drawings. Used principally for bridge construction, these fittings generally are advantageous for strands ⅝ in. in diameter and larger.

In contrast, plant-attached fittings can be applied as required on stock strands. Available for strands up to ⅜-in. dia, they generally are economical for building joists and short bridge beams. They usually cost less per pound of strand anchored than those factory-applied, but tensioning costs

(*Continued on page 34*)



ROOF BEAM, spandrel beam and bond beam will be connected by placing reinforcing steel in the troughs atop the beams, bent around corners, and filling in with concrete.



JOISTS made of block beams are prestressed with steel strands anchored only by bond. In roof construction, they support filler blocks and a cast-in-place concrete topping.

may be higher. Also, to make certain that the anchorage develops the ultimate strength of the tendon, plant-attached fittings should be encased in grout, or the strands projected through the fittings and anchored in cast-in-place concrete.

• Strands go back inside—As mentioned previously, wrapping strands around the outside of block beams was found advantageous for construction of bridges—and also for floor slabs. But for beams for buildings, inserting the tendons inside the block is less costly, because grouting the strand cores to establish bond with the steel eliminates anchorages and ample concrete cover for protection against fire is obtained automatically without increasing the size of the member. So for buildings recently constructed with block beams, the members were fabricated by stringing the block on cables like beads on a necklace.

For some of these structures, a major reduction in anchorage costs was effected by eliminating anchors entirely and depending on bond alone to retain the tension in the tendons. Machine-made units with cored sections are ideal for this purpose because the hollows are formed at no additional cost. While the block concrete must have sufficient strength to resist prestressing and working stresses, the grout that bonds the steel can be given the strength required for that purpose. Furthermore, its volume is limited to the amount required to fill the strand core in the block.

Bonded strands, in addition, have enabled fabricating costs to be cut. Suppose, for example, that a beam requiring six strands with plant-attached fittings is to be fabricated. Since two strands usually are tensioned at one time, three setups of the tensioning rig are required for this beam. If, instead, the strands are to be anchored by bond, two beams are made end to end, separated by a steel jacking frame. The strands, continuous through the frame and both beams, are anchored temporarily at one end of each beam. By jacking the beams apart, the fabricator tensions the strands in both beams simultaneously. As a result, tensioning time per beam is reduced to one-sixth that required when plant-attached fittings are used.

• Warehouse cost cut—These newly developed prestressing techniques were adopted for the roof of a 40,000-sq ft warehouse for General Shoe Corp., of Nashville, Tenn. The building has 20x26-ft bays. Continuous, prestressed block beams span the 20-ft direction and support prestressed channel slabs spanning 26 ft. These precast units have an 8-in.-deep legs and a 3-ft-wide top slab with a minimum thickness of 1½ in. The beams were made continuous over supports for live loads by placing reinforcing bars between the ends of the channel slabs and filling the space with concrete.

How block beam costs decreased in the last four years

Beam Type	Span-Ft	1950, Factory Fitting '51, '52, '53	Plant Fitting 1952 & 1953	Bonded Strand 1953
Bridge beams	32	$111.00	$93.50	Under Test
Stadium treads	30	70.50	66.35	$51.15
Floors and roof joists......	25	Not Used	36.25	29.50
Floor and roof beams......	30	96.50	78.00	60.00

Contract price for the 38,000-sq. ft. building, including heating, lighting and sprinkler systems, was $4.17 per sq. ft. (The lowest four bids were separated by only $2,600.) Prestressed material for the roof was delivered to the site at a cost of $0.75 per sq. ft. of roof area. Erection cost only $.07 per sq. ft. Nashville Breeko Block Co. furnished all the prestressed items, and Sumner Construction Co., also of Nashville, built the structure.

In a commercial building erected for Vernon Williams, contractor, in Nashville, joists with bonded strands were placed on 2½-ft centers and made continuous under live load over a 21-ft and a 26-ft span, by adding reinforcing steel in the slab over the center support. Filler blocks were placed between the joists and a 2½-in. slab cast in place. It is noteworthy that the joists did not require temporary shoring to support the concrete topping.

Prestressed joists and fillers were quoted at $0.58 per sq ft of roof area at the fabricating plant. Erection cost about $0.12 per sq ft.

Construction is under way on a 10,000-sq ft, prestressed concrete building in Minneapolis that will be used to fabricate prestressed-concrete block beams, joists, girders, channel slabs and other precast items. The roof will consist of 50-ft prestressed channel slabs; 50-ft block beams will serve as crane girders and part of wind frames.

Results of the continuous improvement in block-beam construction since 1950 are indicated by the cost data in the table on the left. In it, costs of each type of design are recorded for the various methods of prestressing. Prices are those quoted for the plant of the Nashville Breeko Block Co.

The design and fabricating procedures described were developed and tested at the Nashville Breeko Block Co., Nashville, Tenn., of which Carroll Strohm is general manager and the author consulting engineer.

Bolting cuts two weeks from schedule, slices 40% from riveting estimate

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Listen to Jack Corchin, president of steel erectors Max Corchin & Sons, Inc., Philadelphia. His firm just put up the steelwork for the new Springfield (Pa.) High School. Here's what he says:

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These are *facts.* You can't overlook them. You can't argue about them. You *can* sit down and write for our catalog "High-strength Bolts for Structural Steel Connections."

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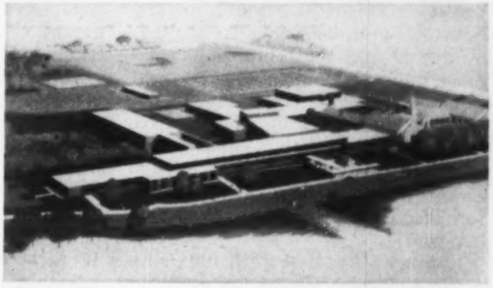

NEW SENIOR HIGH SCHOOL for Springfield Township, Delaware County, Pa. Architect, Harry G. Stewart, A.I.A.; contractor, Turner Construction Co.; steel erectors, Max Corchin & Sons, Inc.

See our insert on high-strength bolts in Sweet's Architectural File

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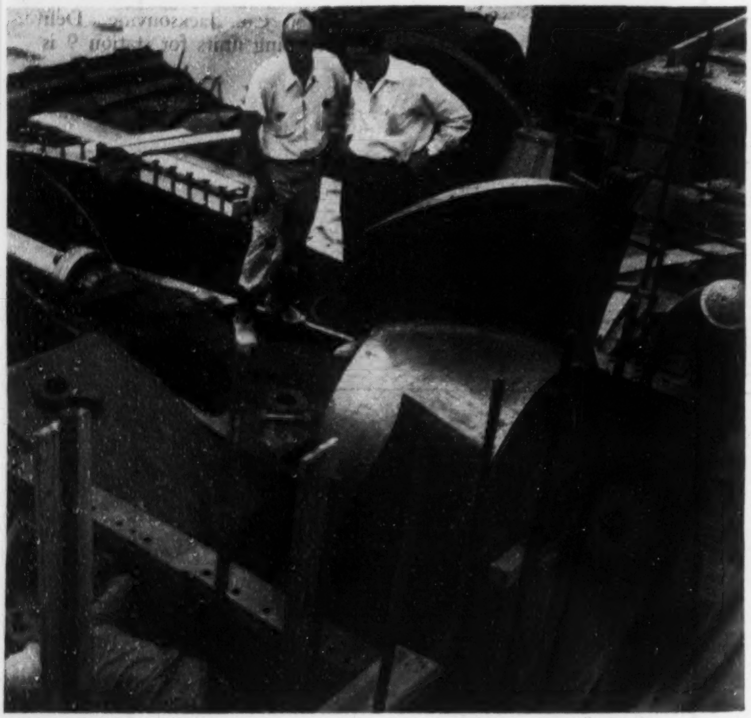


PROPELLER of 106-in. dia goes into housing of pump to move 360,000 gpm.

Pumps to tame Florida floods

Big units will move heavy rainfalls quickly to keep Lake Okeechobee in bounds and to protect agricultural lands

Col. H. W. Schull, Jr.
District Engineer, Jacksonville District
Corps of Engineers

A pump station under construction for Florida's Everglades flood control project will have six units totaling 2,160,000 gpm capacity.

First of the giant horizontal propeller units is being installed now at pump station 5A on West Palm Beach Canal, midway between Lake Okeechobee and West Palm Beach. The station is a component of the Corps of Engineers' Central and Southern Florida flood control plan (see map).

Delivery of the first $220,000 pump marked culmination of six years of planning, design, model studies, and construction by both the Corps of Engineers and the manufacturer, Fairbanks, Morse & Co. The pump has an elliptical suction intake measuring 12x18 ft. With driving unit and appurtenances it weighs more than 160 tons and has a rated capacity of 360,000 gpm against an average static head of 11.3 ft.

• **Hurricane-proof**—Power to operate the cast bronze propeller, which alone is 106 in. in diameter and weighs 13,400 lb, will be supplied by a 1,600-hp opposed piston diesel engine produced by the same manufacturer. Diesel power is employed, since continuous pump operation is most important when tropical hurricanes sweep the area, endangering aboveground electric lines upon which electrically driven pumps would depend.

Present plans call for installing half of station 5A's pumping units for beneficial operation by next September; then increasing to the full pump complement by next March. The structure to house these pumping units and their appurtenances is now being constructed to full ultimate size. It is about 33% complete and is scheduled for completion next March.

The structure will be of concrete block construction with structural steel framing. It is designed to withstand more than 100-mph winds, (35 psf) to permit continued operation under all weather conditions. Its foundation rests upon the limerock formation which underlies the area some 20 ft below ground level. The substructure will measure 108 x 210 ft, and the superstructure will rise 38 ft above natural ground in the portion of the building where the 15-ton service crane is to be installed. Walls will be heavily constructed; stormproof windows and shutters are provided.

Six discharge tubes in the substructure will measure 12x13 ft and will each have automatic closing, shutter-type gates built into the discharge ends to prevent backflow. Each gate has three horizontal shutter sections of hollow cellular construction to provide buoyancy for ease of operation in reducing back pressure and head loss in the discharge pipe.

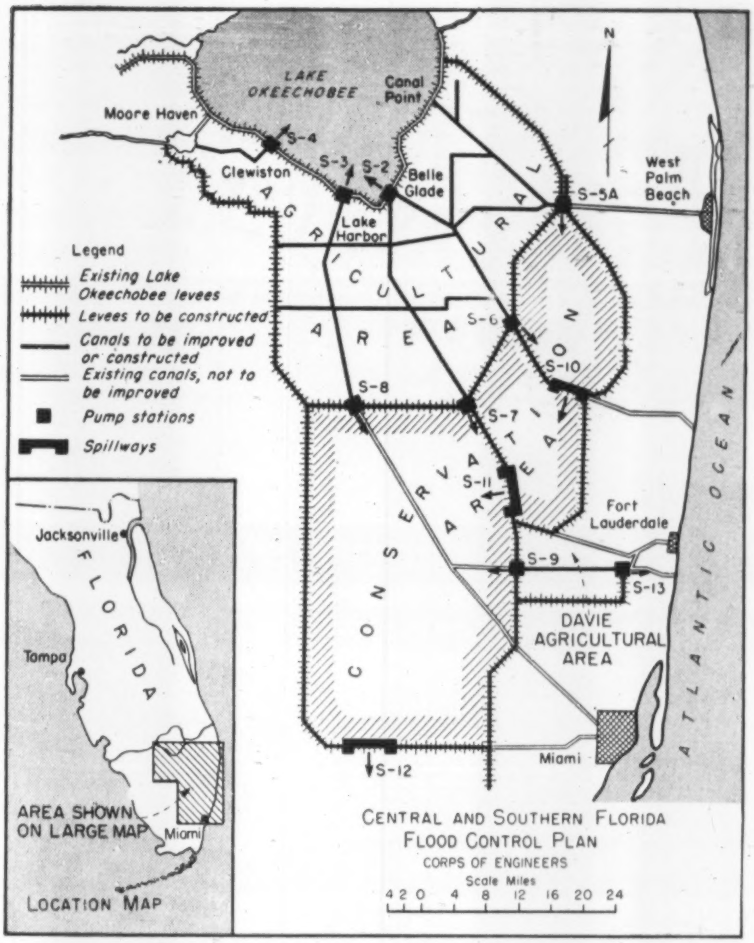
• **One plant of seven**—Pump station 5A is one of seven similar stations included in the authorized first phase of the central and southern Florida Project. Two more are included in the remainder of the comprehensive plan, not yet authorized by Congress for construction. Stations of the overall plan ultimately will total 30 pumping units, with discharge characteristics similar to the unit now being installed, and three units considerably smaller (in station 13).

All pump stations now included in the plan are located in the fertile Everglades agricultural area south and east of Lake Okeechobee, except for two at either end of the South New River Canal near Fort Lauderdale. Three will be located at the Lake Okeechobee ends of arterial canals traversing the 1,100-sq mi area of agricultural muck land generally south of the lake. Four others (including station 5A) are at the outer perimeter of the agricultural area, also on the arterial canal system. The pump stations, together with the improved arterial canals and protective levees surrounding the area, comprise the basic water control system for that region of deep organic peat and muck soils.

• **To protect crops**—Local topography presents so little hydraulic gradient that the pumps are necessary to remove direct rainfall—often exceeding 6 in. in a day—rapidly enough to prevent damage to tender winter truck crops, grown extensively within the protected area. Other agricultural pursuits of the area include vast acreages of sugar cane and beef cattle pasture. Lesser acreages are devoted to dairy cattle, feed, fiber and citrus crops, all more water-tolerant than truck crops.

The Corps of Engineers' flood control plan will provide basic means of proper water control in the agricultural area. In addition to the basic work, subdrainage districts and individual interests will provide local protective works such as dikes, ditches and smaller pumping stations to control water levels in their own holdings.

Basic design of pumping units is predicated on removal of $\frac{3}{4}$ in. of runoff from the entire area in 24 hours. Considering crop needs and various


LAKE OKEECHOBEE
Canal Point
Moore Haven
S-4
Clewiston
S-3
S-2
Belle Glade
Lake Harbor
S-5A
West Palm Beach
N
AGRICULTURAL AREA
S-6
S-10
CONSERVATION AREA
S-8
S-7
S-11
Fort Lauderdale
S-9
S-13
DAVIE AGRICULTURAL AREA
Miami
S-12
ATLANTIC OCEAN
Legend
Existing Lake Okeechobee levees
Levees to be constructed
Canals to be improved or constructed
Existing canals, not to be improved
Pump stations
Spillways
Jacksonville
FLORIDA
Tampa
Miami
AREA SHOWN ON LARGE MAP
LOCATION MAP
CENTRAL AND SOUTHERN FLORIDA FLOOD CONTROL PLAN
CORPS OF ENGINEERS
Scale Miles
4 2 0 4 8 12 16 20 24

LARGE EVERGLADE AREA has system of levees, canals and pump stations planned.

other factors, this rate should be adequate for future needs.

Besides providing rapid agricultural drainage, the pump stations at the lower perimeter of the area will increase materially the outlet capacity from Lake Okeechobee, and will assist in the regulatory discharge of excess water to the water conservation areas which lie in the raw Everglades south of the agricultural area. During periods of agricultural drainage, pumps will discharge both toward Lake Okeechobee and toward the conservation areas. Later discharge for lake regulation will require operation of only the pumps at the outer perimeter.

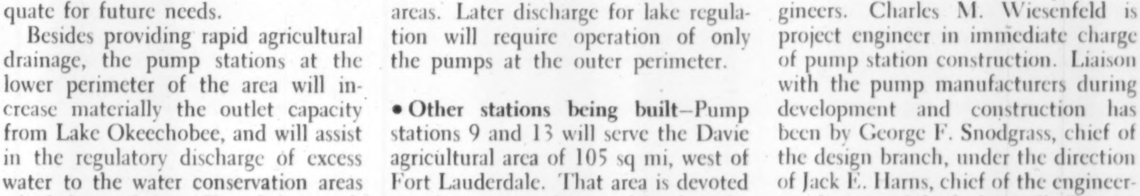
• **Other stations being built**—Pump stations 9 and 13 will serve the Davie agricultural area of 105 sq mi, west of Fort Lauderdale. That area is devoted mostly to citrus fruit and beef cattle. Both of these stations are now being constructed under the supervision of A. L. Hamilton for Ivy H. Smith Construction Co., Jacksonville. Delivery of pumping units for station 9 is expected next December. Those for station 13 have been delivered and will be installed as construction of the housing structure progresses.

Station 9 will have Nordberg pumps of the vertical type with propellers measuring 122 in. in diameter and a suction bell diameter of 204 in. Each will be driven by a radial diesel engine of 1,685-hp; each will discharge 432,000 gpm at a rated head of 10.3 ft. Three pumps for station 13, manufactured by Fairbanks-Morse, are much smaller than those of the other stations, each designed to discharge 80,000 gpm against a head differential of 4.5 ft. Design criteria of ¾ in. of runoff in 24 hours also was used for the Davie area.

All planned pump stations shown on the map ultimately will have the following components:

Station	*No. of units*	*Total design discharge capacity cfs.*
No. 2	4	3,600
No. 3	3	2,580
No. 4	3	2,160
No. 5A	6	4,610
No. 6	3	2,920
No. 7	3	2,490
No. 8	5	4,170
No. 9	3	2,870
No. 13	3	540
Total	33	25,940

Design and construction of the entire central and southern Florida Flood Control Project is under direction of the Jacksonville District, Corps of Engineers. Charles M. Wiesenfeld is project engineer in immediate charge of pump station construction. Liaison with the pump manufacturers during development and construction has been by George F. Snodgrass, chief of the design branch, under the direction of Jack E. Harns, chief of the engineering division of the Jacksonville District Office. Station 5A is being built by the Belcher Oil Co., Miami, Fla., under the supervision of George Edwards.



PUMP STATION CONSTRUCTION is mostly a job of installing record-size units. This is pump station 5A.

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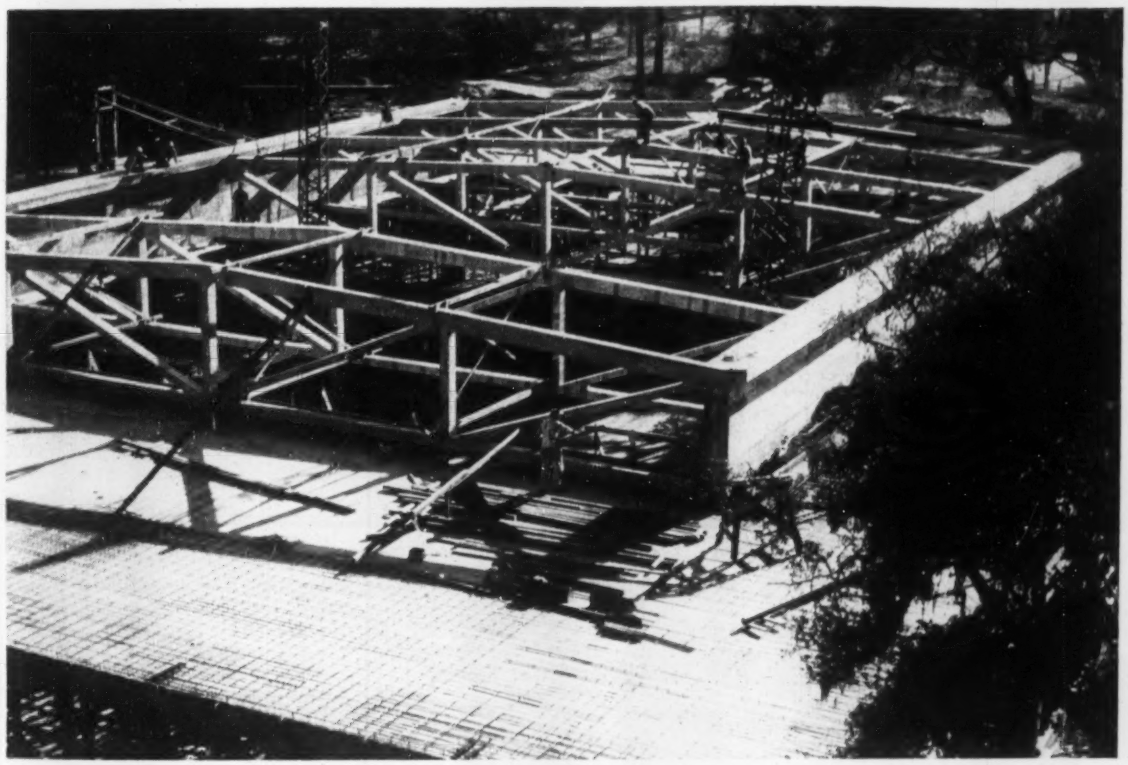


Precast concrete trusses span between concrete girders to cover 10,500 sq ft and form . . .

Unusual roof on only four supports

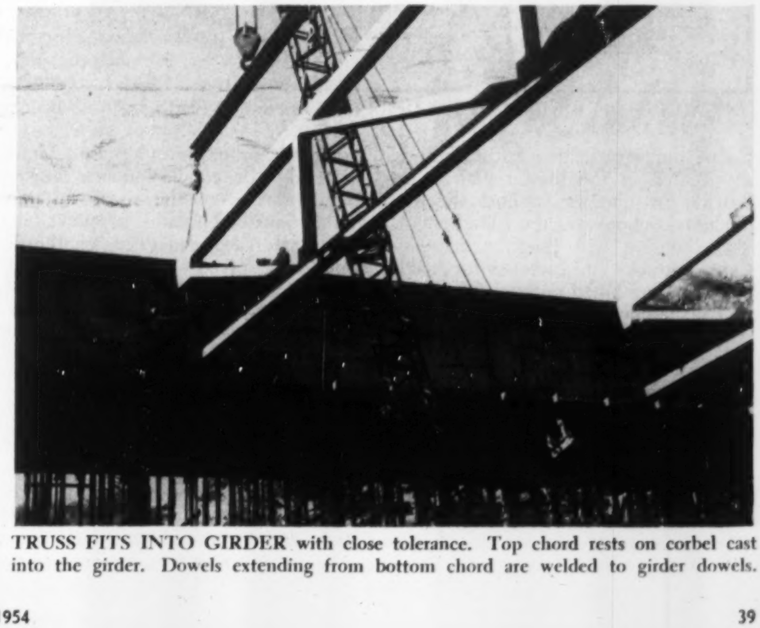
The roof structure for a new 1,200-seat lecture hall at the U. S. Naval Postgraduate School, Monterey, Calif., is supported by four columns and two 104½-ft concrete girders. Seven precast concrete trusses, each 87½ ft long, bridge between the girders. All of these members plus precast concrete roof slabs are made of lightweight concrete.

The columns, girders and trusses consist of 100 lb per cu ft, 3,500-psi concrete, using an expanded shale aggregate. And the roof slabs are made of 80 lb per cu ft, 2,000-psi concrete using perlite-pumice aggregate. The designers adopted this unusual combination to get the cheapest building frame possible consistent with good engineering practice.

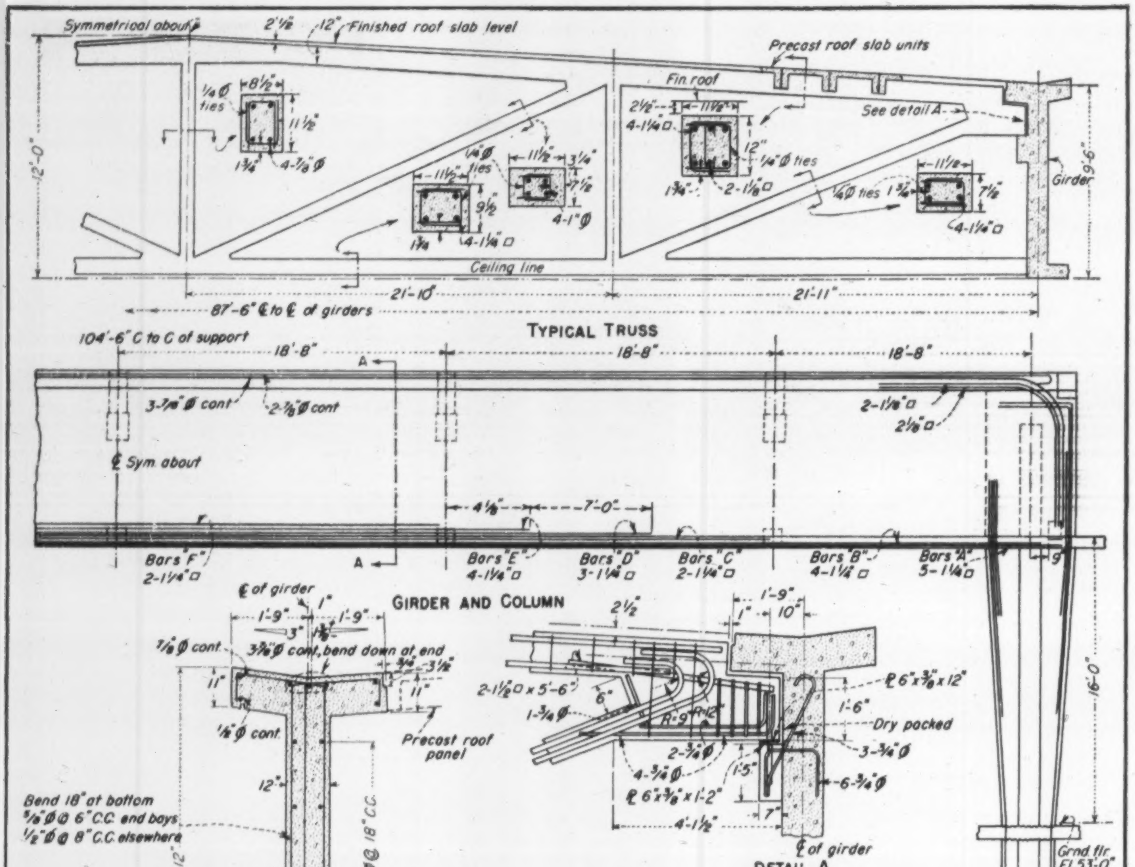
The building is one element of an expansion program for the Engineering School of the U. S. Naval Postgraduate School. The purpose of the school is to maintain courses of instruction for the advanced education and training of commissioned officers in basic sciences and the application of these sciences to naval uses. Some 600 students are in attendance at the engineering school in Monterey, taking one, two or three-year courses in gas turbines, explosives, aerology, electronics and metallurgical engineering. The work at Monterey is supplemental to advanced instruction at civilian colleges.

Also located at Monterey is a General Line School with an additional 600 students. No construction work is under way for this portion of the Postgraduate School. Instead, it will continue to be housed in facilities of the old Del Monte Hotel taken over by the Navy prior to moving the school from Annapolis in 1952.

(Continued on page 40)



TRUSS FITS INTO GIRDER with close tolerance. Top chord rests on corbel cast into the girder. Dowels extending from bottom chord are welded to girder dowels.



Symmetrical about
Finished roof slab level
Precast roof slab units
Fin. roof
See detail A
Girder
Ceiling line
21'-10"
21'-11"
87'-6" ℄ to ℄ of girders
12'-0"
9'-6"
TYPICAL TRUSS
104'-6" C to C of support
18'-8"
3-7/8" Ø cont
2-7/8" Ø cont
℄ Sym. about
Bars "F" 2-1¼" □
Bars "E" 4-1¼" □
Bars "D" 3-1¼" □
Bars "C" 2-1¼" □
Bars "B" 4-1¼" □
Bars "A" 5-1¼" □
GIRDER AND COLUMN
℄ of girder
7/8" Ø cont.
3/8" Ø cont., bend down at end
1/8" Ø cont.
Precast roof panel
Bend 18" at bottom
5/8" Ø @ 6" C.C. end bays
1/2" Ø @ 8" C.C. elsewhere
1/2" Ø @ 8" C.C. (end bays only)
1/2" Ø @ 8" C.C. end bays @ 18" C.C. elsewhere
4 bars "B"
4 bars "E"
2 bars "F"
3 bars "D"
2 bars "C"
5 bars "A"
2 3/8" Ø cont.
SECTION A-A
DETAIL A
Dry packed
℄ of girder
SECTION B-B
3/8" Ø ties @ 12" C.C.
12-1¼" □
Grnd. flr. El. 53'-0"
Basement floor El. 37'-2"
16'-0"

DETAILS OF TRUSSES AND GIRDERS for concrete roof framing of Navy building at Monterey, Calif.

But the new lecture auditorium is so situated in the master plan as to provide for joint use by both the Engineering School and the Line School. The building will function for lectures, seminars and exercises for either school or combined groups of both. It also will provide daylighted extra study space.

• Foundations difficult—To get a clear understanding of the lecture hall structure (a 1,200-seat amphitheater and not a balcony-type auditorium) the building should be considered from foundations to roof.

Underlying formation at Monterey is a loosely-consolidated, high-void-ratio sand overlying bedrock by 50 ft. Experience on other buildings at Monterey led to the conclusion that caisson foundations were the most suitable and perhaps only feasible support. The sandy material provides very small unit support for spread footings and almost no support for friction piles.

To reduce cost of the foundations, it was desirable to use as few caissons as possible. Accordingly, designers decided that four caissons could support adequately the 10,500 sq ft of lecture hall roof area plus some surrounding facilities. But the frame had to be of lightweight concrete to make this possible. The caissons are 36-in. dia, and drilled from 1 to 3 ft into bedrock. Each supports about 300 tons.

Walls along each side of the hall are equipped with sliding panels for addition to the auditorium capacity, so the columns have no lateral support from ground level to roof level. This means that the columns must be rigid enough to resist in both directions horizontal loading induced by earthquakes (figured in this instance at dead load of the roof plus one-half live load—both times 10%). To provide necessary rigidity, the columns were constructed in the shape of a cross—5 ft in the longitudinal direction and 4 ft in the transverse direction with the web thickness being 14 in.

• Longitudinal girders—Wide column spacing was, in part, made feasible by use of long girders on each side of the lecture hall area. And the girders were in turn made feasible by the fact that a wall was necessary along each side anyway; the wall connects the amphitheater roof with a lower roof covering surrounding facilities. Thus, girders are provided merely by making the wall slightly thicker, adding reinforcing steel and including a T-shaped element at the top for additional compressive area.

In effect, then, the columns and girder on each side of the lecture hall form a simple rigid frame. This concept is important in the design.

The engineer decided to use lightweight concrete in the girders to reduce load on the foundations. This meant that the columns also had to be lightweight concrete. The reason for this is that difference in rigidity of lightweight and regular concrete is such that the columns would have assumed most of the bending moment if the two different materials had been used. And, to resist such bending moment, the columns would have to have been quite large in section.

• **Precast trusses**—Once the longitudinal support was established, the designers had to determine the transverse support and the roof membrane. Because of the span length, only steel and concrete trusses were considered feasible. Prestressed concrete girders were ruled out by the small number of repetitions; steel plate-girders were estimated to be too high in cost.

According to Navy standards, structural members in a building of this sort must be of four-hour fire resistance. Thus light steel trusses would have to be completely fireproofed. This weighted a cost analysis made by the designing engineer in favor of precast concrete trusses. According to these figures a steel truss would cost $3,300 (6.4 tons of steel—$2,200; 860 sq ft of concrete forms at 80¢ a sq ft—$680; concrete—$180; and lifting the concrete $240). This compares with $1,690 for a concrete truss (553 sq ft of forms at 80¢ a sq ft—$440; 2½ tons of steel—$620; concrete—$180; and lifting of the precast truss—$450).

In the engineer's opinion, the use of concrete trusses was entirely feasible. For these reasons the lecture hall was spanned by seven precast concrete trusses.

Construction of the building further demonstrated feasibility of the truss use. The top element of each truss fits under the T-shaped upper flange of the side girders and rests on a corbel cast into the girder. Steel plates cast into the trusses were welded to the steel plates cast into the corbels.

Bottom chords of the trusses were connected to the girders by welding dowels extending from each. In theory, the bottom chord in the end panels of each truss is not stressed except in the case of unbalanced lateral load. Although no vertical member was called for at the extremities of the trusses, the contractor elected to use a 1-in. square bar there for protection during erection.

The two end trusses were cast on the roof forms at each end of the lecture hall. The five intermediate trusses were cast on the basement floor.

First step in erection was to turn the trusses from the horizontal to the vertical position. A steel beam outrigger was attached to each truss during this process to prevent damage from bending. No trouble was encountered.

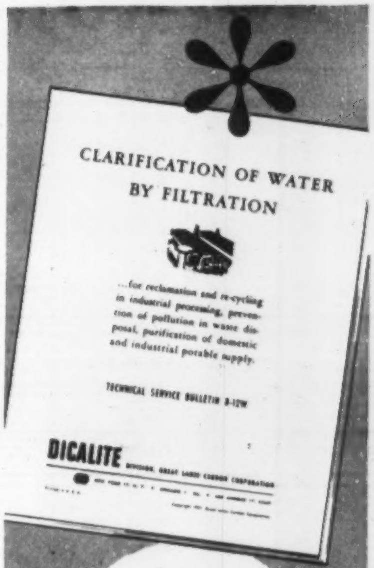
Then each of the trusses was lifted into position. Cramped space made erection of the final two trusses a difficult movement problem. Erection was accomplished by two crawler cranes. Four-point pickup was used, with each crane working against a spreader beam. Suspended from each end of the spreader beam were cables over a sheave with each end of the cables bolted to the top of the truss.

• **Roof slabs**—Precast concrete roof slabs finished the structure. These slabs are 18 ft 2 in. by 2 ft 6 in. in plan and have an overhanging lip that rests on top of the trusses. From this lip extend reinforcing bars that are welded to short dowels projecting from the top of the trusses.

• **Administration**—The building is a project of the U. S. Naval Postgraduate School, Rear Adm. Frederick Moosbrugger USN, superintendent. Design and construction supervision for the Navy's Bureau of Yards & Docks is under the direction of Capt. G. K. Brodie, CEC USN, 12th Naval District public works officer. Resident officer in construction is Comdr. W. W. Moore, Jr., CEC USN, Public Works Officer for the Postgraduate School.

This building and the others in the construction program were designed by Skidmore, Owings & Merrill, architects. Design of the entire project was under the direction of Walter Netsch, associate partner and chief of design for the firm's San Francisco office. Wm. Dunlap was assistant and Laurence Lackey was project manager. Structural engineer on the work was Isadore Thompson, consulting structural engineer of San Francisco.

Contractor for the lecture hall building was Dinwiddie Construction Co. of San Francisco for which Howard Caswell was superintendent. Bids for this building were lumped with other work. Successful low bidder had a $643,000 deductive figure covering the lecture hall.



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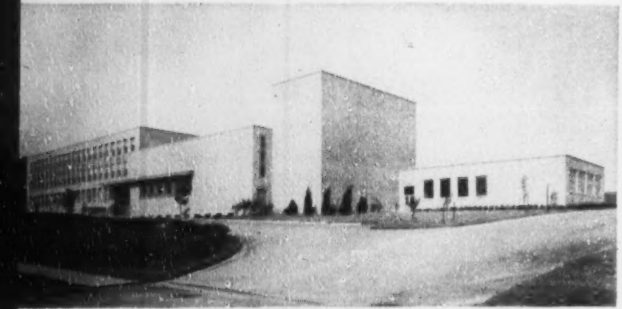
$5-million Bigelow Apartments, at the top of Pittsburgh's famed Golden Triangle tower 20 stories, contain 465 units all air conditioned. Steeltex Floor Lath provides reinforcement for all floors. Arthur E. Tennyson, Architect. Martin C. Knabe, Structural Engineer. Behrman & Passel, Contractors.

$13-million low rent public housing project, St. Clair Village, 79 buildings, 723 units in 3-story buildings, 366 units in 2-story row houses. Concrete floors poured over Steeltex. Marks, Fisher & Simboli, Architects. George Levinson, Design Engineer. Ragnar Benson, Inc., Contractors.



New 3-story addition to Shaler Township High School added 20 classrooms, upped accommodations from 750 to 1400 students, cost $1.35 million, has gym, auditorium, three shops, offices and locker. Steeltex Floor Lath on all floors. Charles M. & Edward Stotz, Jr., Architects. Geo. H. Chilli, Contractor.

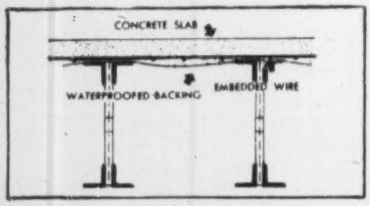
Why building designers in
for reinforcing concrete

Pittsburgh, City of Vision, is one of the most progressive cities in America today. Once dirty and smoky and threatened constantly with floods, Pittsburgh, now undergoing a renaissance, is one of the country's cleanest cities.

A vast network of dams in the headwaters of the Allegheny and Monongahela make damaging floods virtually impossible. A stream purification program is well under way. A new $5-million-per-mile east-west parkway, partially completed and in use, will speed traffic through the city's heart without cross streets or traffic lights. New skyscrapers, new research centers, new industrial plants, new parks, new off-street parking garages have brought about a boom in new apartments and public housing, new schools and hospitals, new shopping centers.

When buildings of this type are being designed, poured concrete decks are most desirable and when you pour concrete, it is only natural to specify Steeltex Floor Lath, the galvanized steel wire reinforcing which carries its form on its back (see cross section below left).

Steeltex requires no additional form or pencil rod reinforcing. It costs less to install than other types of forms



NOTE: In the cross section the weight of the wet concrete forces the backing away, which permits the galvanized steel mesh to assume its proper position in the slab. Steeltex floor lath also performs two other functions: It permits work on the floor below while pouring is in progress and retains moisture to assist proper curing.

One man can roll out a 125′ roll of Steeltex in a few minutes. Steeltex provides both waterproof form and steel reinforcement for concrete floors, roofs.

The $3.5-million nurses home at University of Pittsburgh towers 14 stories, completely air conditioned, contains library, recreation room, reception rooms, cafeteria seating 400—comfortable living quarters for 600. Steeltex in upper floors. Ingham, Boyd & Pratt, Architects. Trimble Company, Contractors.

Pittsburgh specify STEELTEX® floors and roofs

and reinforcement for concrete because Steeltex can be rolled out like a carpet, stretched with a special tool, and clipped tightly in place by one man (see photo below left).

Steeltex with its waterproofed backing also prevents waste of concrete by reducing leakage to a minimum from the freshly poured slab—craftsmen can continue working on the floor below without getting splattered. Expensive clean-up time is eliminated.

Steeltex insures a strong floor because embedment of steel reinforcing takes place automatically (see note below left). Steeltex allows concrete to cure slowly, properly—guards against excessive cracking—can be installed over any type of joist—will support ample safe loads from 109 to 886 lbs. per square foot depending on spacing of joists and thickness of slab. No wonder Steeltex has been the choice of architects, engineers, contractors, and building owners alike, not only in Pittsburgh but wherever concrete slabs are poured over joists.

If your building plans call for poured concrete floors, roofs, plaster walls or ceilings, masonry veneer or Portland cement (Stucco) exteriors, there's a type of Steeltex reinforcing that will do the job better, faster, with less effort at lower overall cost.

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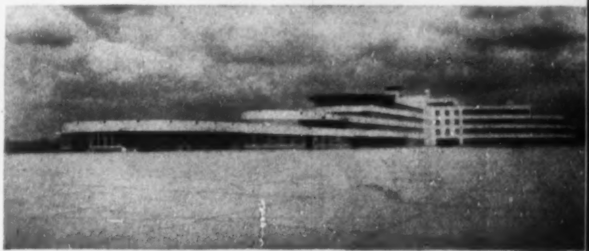
St. Clair Hospital, Mt. Lebanon Township, Pa., serving the growing South Hills area has 116 beds—cost $1.34 million. Steeltex used in all floors. Kuhn & Newcomer, Architects. R. A. Zern, Structural Engineer. H. Busse, Contractor.

Brentwood-Whitehall Shopping Center built on two levels has 25 shops in 210,000 square feet—80% are air conditioned—parks 1,000 cars. All floors reinforced with Steeltex. Forsyth & Blezard, Architects. Leland Cook, Structural Engineer. Landau Bros., Contractors.



Mammoth decks in this fabulous $10-million terminal building at $42-million Greater Pittsburgh Airport, were poured on Steeltex Floor Lath. Last year 2.5-million people including travelers spent $20 million at ticket counters, restaurants, nightclub, theater, hotel and shops. Joseph Hoover, Architect. Leland Cook, Structural Engineer. Dick Construction Co., Contractors.

Here are other recent buildings in Pittsburgh and vicinity using Steeltex:

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Bedford Dwellings
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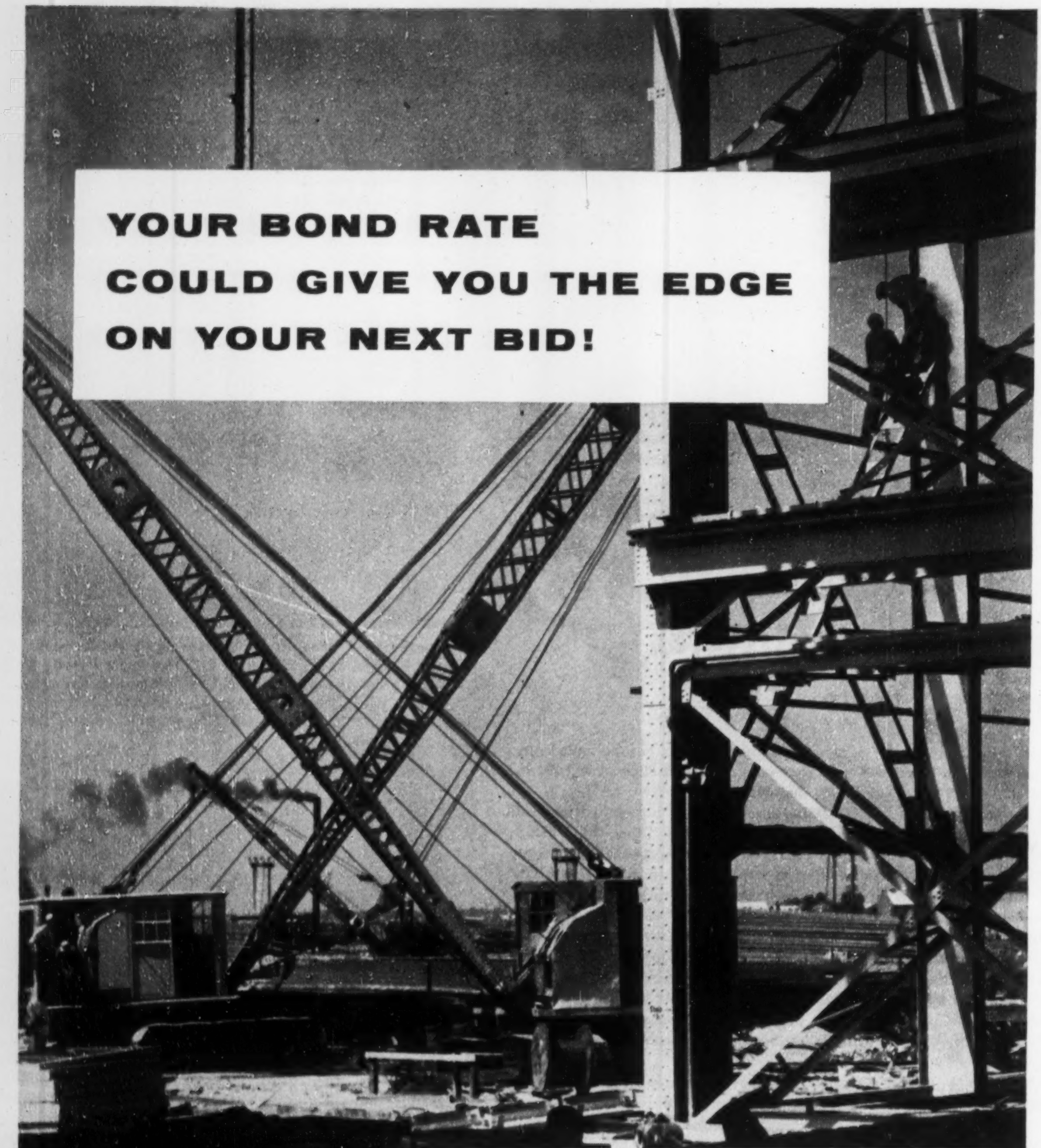
Greentree Apartments
Hebron Grade School
Kennilworth Apartments
Pennsylvania College for Women (Administration Building)
Shadyside Presbyterian Church (Chapel)
St. Augustine's High School
Talbot Towers (Housing Project)
Union Railroad (Office Building)
Westinghouse Educational School
Westinghouse Electric Corporation (Atomic Project Buildings)



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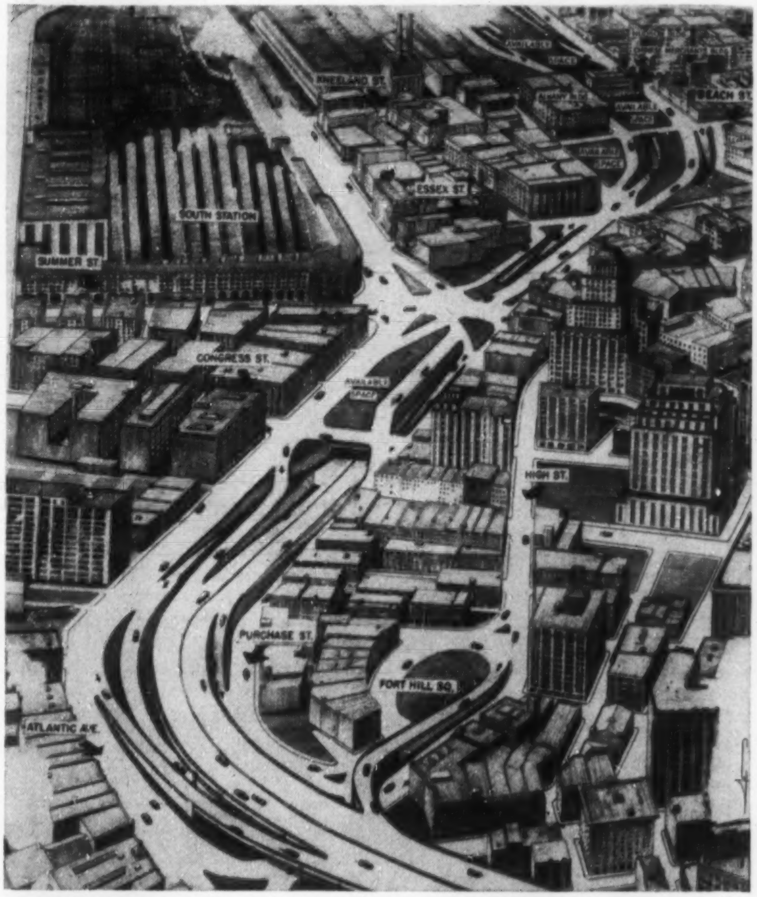
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SUMMER ST.
CONGRESS ST.
AVAILABLE SPACE
HIGH ST.
PURCHASE ST.
FORT HILL SQ.
ATLANTIC AVE.

ACCEPTED STATE ROUTE (looking south) features underground section. The rejected city alignment would have passed east of the rail yards in left background.

Boston artery link gets green light

Harmony is reached in city-state dispute — route will be elevated with depressed and underground sections

The recent solution of a city-state controversy over location of the route for the southern section (and final link) of the Boston, Mass., Central Artery highway was the green light for an early start on the 4-year, $50-million project.

The artery is to be a six-lane expressway with an estimated cost of more than $110 million. Already $57 million has been spent—or committed—on the northern portion, under construction since January, 1951.

• **Ends long controversy**—The route of the artery has been a touchy subject for 43 years, and attainment of harmony marks the end of a stormy controversy. No less than 58 studies have been undertaken to establish a route that would best accomplish the highway's purpose of relieving traffic pressures and providing motorists with easy access to Boston's business and entertainment sections.

The latest trouble, with city and state interests at loggerheads, lasted for three months but unlike its predecessors it has been resolved to the complete satisfaction of both sides. Mayor John B. Hynes of Boston and Gov. C. A. Herter of Massachusetts indicating that they are in complete harmony on the final plan.

• **The city proposal**—Under the city plan, the southern link would have been elevated for its entire length. It was the straighter of the two routes, but boasted only six interchanges serving Boston motorists.

Long, land consuming ramps would necessitate acquisition of large tracts that would be lost to development forever. The plan would seriously impair Atlantic Avenue, backbone of the city plan, as a surface street, and because of ramp difficulties, serious traffic conditions certainly would result from construction of the straightline route.

• **The state plan**—Surprise feature of the state plan is a 2,400-ft. underground section that will connect with a depressed section about 1,000 ft in length. In discussing the decision on these portions, John A. Volpe, state commissioner of public works, stressed two benefits: First, a boulevard type highway, useful to local traffic, will be built above the underground structure; second, this feature will, he believes, help to create new and higher property values along the route.

The only noticeable change from the preliminary state-sanctioned plan is the movement of alignment 100 ft west for a short distance at the southern terminus, to permit the Boston and Albany Railroad to retain seven tracks instead of five as originally planned.

• **Additional ramps to further purpose**—Under the city program, Volpe insisted, the artery was little more than a through route for vehicles, and if built according to the Boston plan, it would have been one of the most expensive traffic by-passes in history. (The cost is now estimated at about $22 million per mile.)

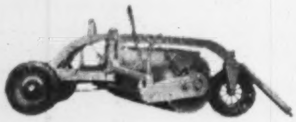
Volpe pointed out that the state plan called for 18 connecting structures (eight more than proposed under the other plan), and in so doing, fulfilled all important functions of the new artery.

• **Displacement a critical question**—Explosive protest broke immediately when the state plan was made public. Factions bitterly opposed to the program were residents and merchants of Boston's Chinatown, business interests in the extensive leather industry, and representatives of the city's teeming garment industry.

Final figures released, however, indicate that displacement will not prove as sweeping as was feared. Only 58 of the city's 290 Chinese families will be relocated, and only 11.2% of the 332,000 sq ft of Chinese busi-

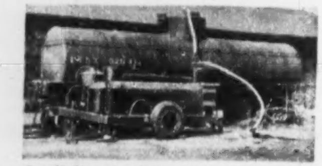
(Continued on page 46)

GRACE Asphalt and Compaction Equipment



3 sweeper models, axle, engine or tractor powered.

Chip spreaders 8' to 12' width. Also asphaltic concrete spreaders.



Rapid Fire circulating heaters heat and unload large tanks of asphalt.

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Rapidspray Maintenance Distributors. Also heaters for production melting of barreled asphalt.

Pneumatic rollers 7 to 50 tons.

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ness floor area will be lost, 10.1% of the 2.4 million sq ft of garment floor area will be affected, and 10.6% of the leather industry's 1.6 million sq ft will be lost.

According to all participants in the program, losses to the affected industries will be more than recompensed through increased accessibility of the area to business interests.

Leaders of the Chinese, leather and garment interests, however, are still objecting to the plan as too costly.

Design advantages, according to Volpe also include a traffic-capacity increase of 36,000 cars per day over the city proposal. The latter, he said, would "strain at the seams" under its designed 130,000 trips per day, but the new route will handle 166,000 long and short trips per day.

• **Parking also provided**—At least four large areas are being considered for development of off-street parking facilities.

With agreement finally reached, the full-speed-ahead signal has been given to consulting engineers for drafting design drawings and pinpointing land and buildings that will have to be taken.

It is estimated that demolition operations would not be started for at least six months, and that it would be from nine months to a year before actual construction could be started.

Housing violators are hit—rent cuts speed compliance

The imposition of rent reductions on landlords found guilty of practices dangerous to life or detrimental to health is New York City's latest weapon against continuance of uncorrected violations in buildings.

With full support of State Rent Administrator Joseph D. McGoldrick, the program calls for rent reductions of 50% to be imposed upon landlords found guilty in Magistrate's Court.

The offending landlords will be given seven days in which to answer charges of the state rent commission before the reductions go into effect.

McGoldrick said, "In no case will the original maximum rent be reinstated until the local rent administrator receives absolute proof that the violations against the building in question have been removed."

It was announced that two offending owners already have received notice of impending 50% reductions and a third was informed that the rents on his tenement building had been reduced to one dollar a month as of April 1, when he pleaded guilty before the chief magistrate of depriving tenants of utilities.

City hall for Flint, Mich.

With condemnation of land under way for a six-block area of downtown Flint, Mich., and awarding of the design contract recently, the city is assured of construction of its $5-million city hall.

The architects, H. E. Beyster & Associates, Inc., of Detroit, already is studying space requirements for the building, claimed to involve one of the most complete city hall designs in the country.

When completed, it will contain all city offices including police, health and court rooms. A large parking area also will be provided.

Century-old main scoured

What can you do with century-old water mains? Clean 'em, according to the Elizabethtown Water Co., of Elizabeth, N. J. And it proceeded forthwith to do it—as part of a $2-million improvement program.

Choosing the lightest consumption period of the week—10 P.M. Saturday to 6 A.M. Sunday, it carried out a pipe-reaming job on a five-mile stretch of 36-in. pipe that runs from Oak Tree, in Middlesex County to the Linden-Clark Township line in Union County. Accumulated mineral deposits were removed with a revolving steel scouring tool, and the loosened deposits washed away under pressure.

Warning users that some discoloration would persist even after the eight-hour job was completed, James Girand, the company's chief operating executive, said the pipe-cleaning will permit full utilization of the line pressure generated in a new 48-in. main soon to be installed, with a net benefit to users of full pressure as well as maximum supply from the old line.

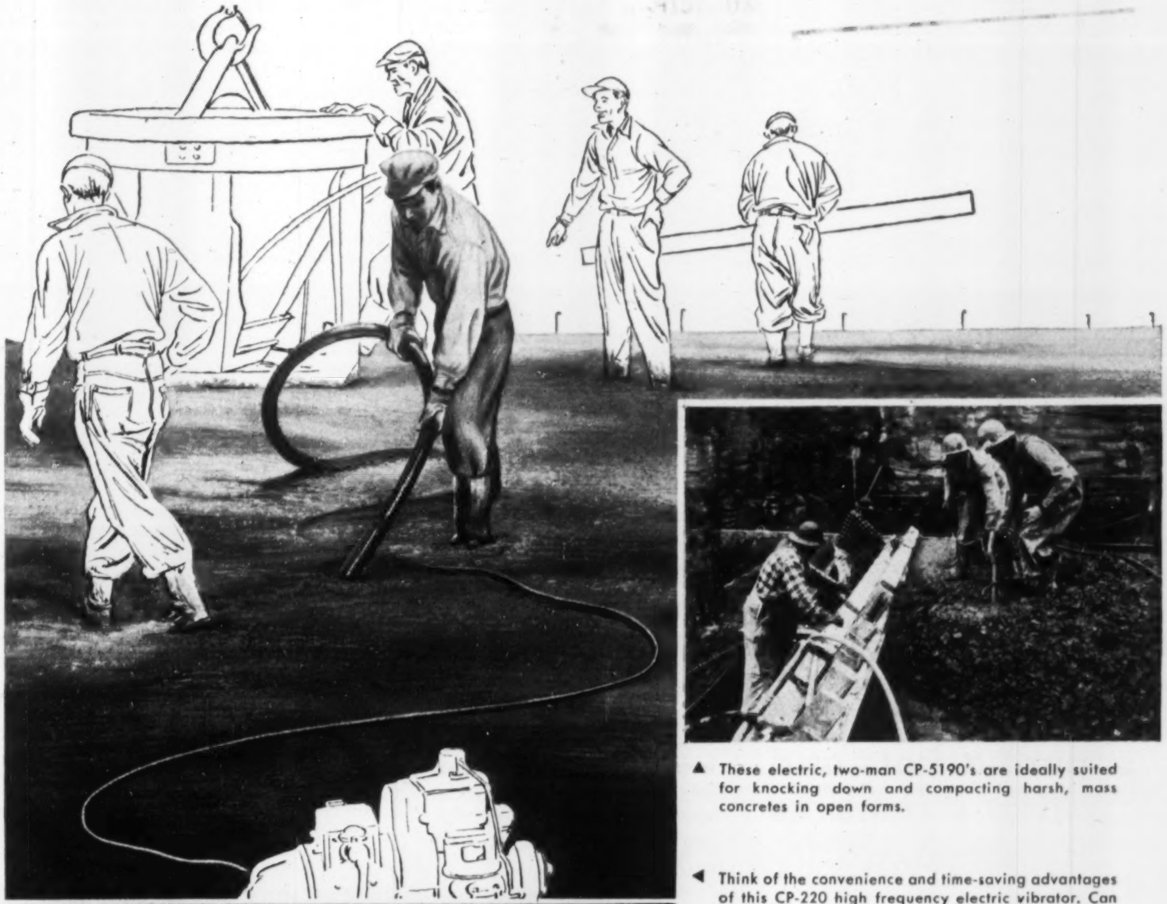
All industrial users were contacted by the company prior to the operation, and all pledged their understanding and cooperation.

Try truck passing lanes

California's division of highways plans to provide experimental truck passing lanes at five locations on U. S. Highway 101 in Humboldt County, northwestern California.

If the project works out to relieve traffic jams, consideration will be given to construction of additional lanes at other locations.

(*Continued on page 48*)



▲ These electric, two-man CP-5190's are ideally suited for knocking down and compacting harsh, mass concretes in open forms.

◀ Think of the convenience and time-saving advantages of this CP-220 high frequency electric vibrator. Can be used anywhere within a 400-foot radius—the generator doesn't have to be moved from spot-to-spot.

Your Vibrator Is As Important As The Man Behind It

Of primary importance in vibrating concrete is the operator—he alone controls the quality of his work. Of equal importance is the selection of the right vibrator for the right job. That's where CP can be of help! Whatever the conditions, there's a CP Vibrator suited to the specific job requirements. The complete line of CP Vibrators includes seven different Pneumatic and High Frequency Electric Vibrators in one and two-man types and in frequency ranges to 10,000 VPM. For more details write *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, N. Y.*

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The length of each 10-ft-wide lane will vary from 800 ft to 1,200 ft. The cost of the five lanes is estimated at $30,000.

Each of the five locations is situated on a steep grade where numerous trucks are forced to travel at slow speeds and where, because of narrow pavement and restricted sight distances, long lines of traffic are formed with attendant hazards and delays.

The traffic congestion is greatest in the summer when tourists flock into the famous redwood tree country, and trucks are hauling logs and lumber.

Provide off-street parking Saint Paul tells builders

An ordinance requiring provisions for off-street parking for all new dwelling units constructed in St. Paul, Minn., has become effective.

The measure applies to any new residence, whether single family, duplex or apartment house; to any residential building on which alteration exceeds 50% of present valuation, and for any other dwelling units added.

The ordinance, according to Alfred H. Schroeder, city architect, does not specify that the off-street parking facility must be a garage. It may be an open area, Schroeder said, but it must be located under the same regulations controlling location of a garage.

Off-street parking areas must include room for at least one car for each family unit in the building.

For parking up to four cars, the property owner submits a plan showing the location of the off-street parking area in relation to lot lines and buildings, its size and entrance. Authorization in this case is incorporated in the regular building permit.

Where the area is to hold from five to nine cars, separate permit application must be made showing size, entrances, type of surface and fencing.

For areas to hold 10 or more vehicles, commercial parking lot requirements must be met.

Under the new ordinance, a parking area must "be on the same plot or premises" with a one- or two-family residence; but for a larger building the parking space may be up to 300 ft away as long as it is on a site that belongs to the owner of the principal structure.

Included is a hardship clause under which the parking requirement may be waived in some cases where special conditions prevail.

The ordinance does not apply in the downtown district, nor to hotels. However, city officials intend to extend it later to other types of buildings.

Another supermarket under construction using Summerbell clear-span timber trusses. Harold S. Johnson, architect; R. Howard Annin, engineer; Jack Brothers, contractor.

You can put more useful, post-free space into supermarkets and other structures economically

TECO wedge-fit connectors spread the load more evenly throughout the timber joint, thus bringing into play the full structural strength of the wood members. They are the efficient key to strength, permanence and economy in modern timber construction.

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Typical roof truss designs, illustrating the TECO system of construction, are available without charge to designing engineers. These designs for light and heavy construction are listed in the booklet, "Typical Lumber Designs". Send for FREE COPY today.

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ENR-545

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Toncan Corrugated Metal Pipe is strong and flexible. It withstands the day-after-day pounding of heavy loads. It is unaffected by impact, vibration, severe weather changes or shifting soils. It is ideally suited for use under heavy fills or where slopes are steep.

Lightweight, unbreakable sections reduce shipping, handling and installation costs. Toncan Corrugated Metal Pipe can be easily installed in any weather with unskilled labor.

And, here's another advantage. Toncan Corrugated Metal Pipe offers the highest rust-resistance of any ferrous metal in its price class. It is made from Republic Toncan Iron—the ALLOYED IRON containing twice the amount of copper ordinarily used in copper-bearing steels and irons—plus just the right amount of molybdenum to make the copper most effective in resisting rust.

Ask one of the Toncan Drainage Products Manufacturers listed below for complete engineering data on these low-cost, easy to install drainage structures. Or write to:

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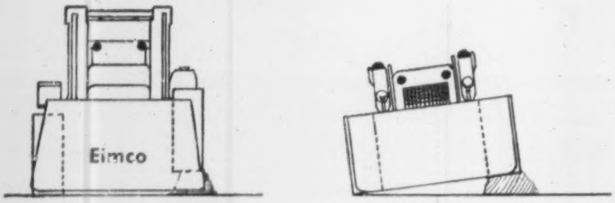
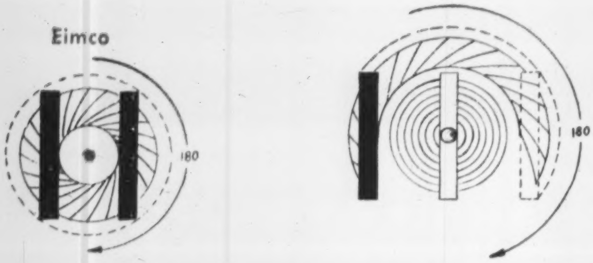
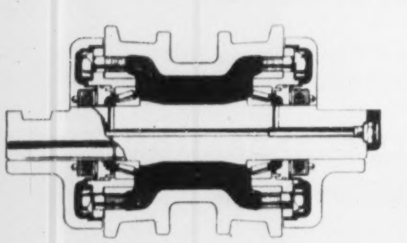
WORLD'S FINEST TRACTOR EXCAVATOR



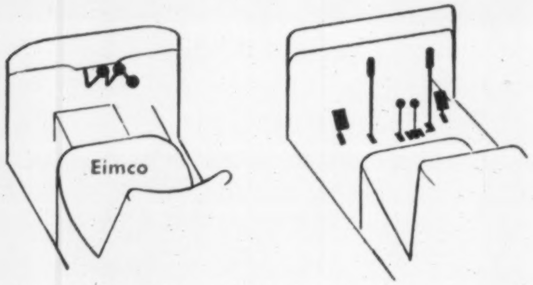
OSCILLATION — with loader attachment — exclusive on Eimco 105, this feature permits better loading on uneven floors in pits or stripping operations.



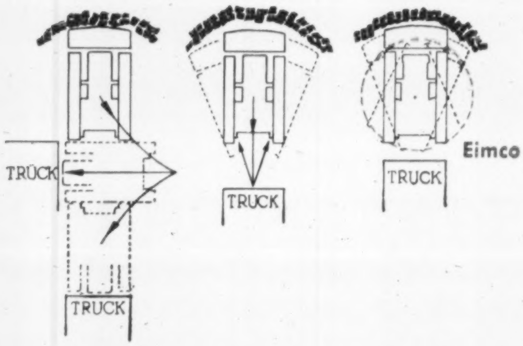
INDEPENDENT TRACK OPERATION — In a turn one track runs forward, the other reverse, cutting turning radius to a minimum. Eliminates excessive wear on track, rollers, idlers and track frame. On most machines one side is locked and skidded for a sharp turn.



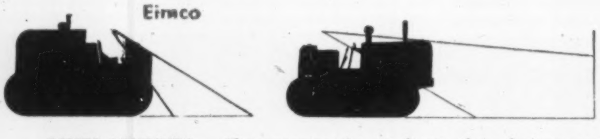
THE EIMCO 105 TRACK ROLLER — A one piece cast alloy steel roller with bearing cages and husky shaft on Timken roller bearings completely sealed against dirt and moisture. Careful heat treatment prolongs life and maximum grease capacity assures lubrication.



EASY SIMPLE CONTROLS — Eimco's easy finger tip controls give better maneuverability with less effort. Change speeds without stopping — instant reverse.



MANEUVERABILITY — Faster loading into haulage units because of Eimco's overhead loading action and independently controlled tracks. Note trucks can be kept closer, cutting haulage time.



BETTER VISIBILITY — The operator sits up front where he can see. Loading, bulldozing or pushing are more efficient, eliminate guesswork.

Every feature of the Eimco 105 is designed for maximum customer service with minimum maintenance. One of these features is the full oscillating track EVEN WITH THE LOADER ATTACHMENT. This is an exclusive feature on the Eimco 105 since standard practice in the construction field is to tie the tracks rigidly when a loader is mounted on any tractor unit.

The full oscillating feature prevents excessive frame twist, wear on tracks, rollers, and idlers. Traveling on uneven ground the heavy equalizer bar supports the front end of the tractor and rides freely in its universal type socket in each track roller frame so that either track is free to move up or down without tilting the engine or frame.

This feature provides maximum ground contact under all conditions and maximum drive which is essential in good digging and loading.

Write for information to The Eimco Corporation, P. O. Box 300, Salt Lake City, Utah.

WITH COST SAVING ADVANTAGES

Above left: Eimco 105 digs in stock pile of chunky limestone. Above right: Two speed bucket mechanism loads light trucks easily and fills big trucks full. Below left: Loading rock from pit. Bottom: Clearing slide area after heavy rain. Below right: High discharge loads into high railroad cars.

EIMCO

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Salt Lake City, Utah, U.S.A.
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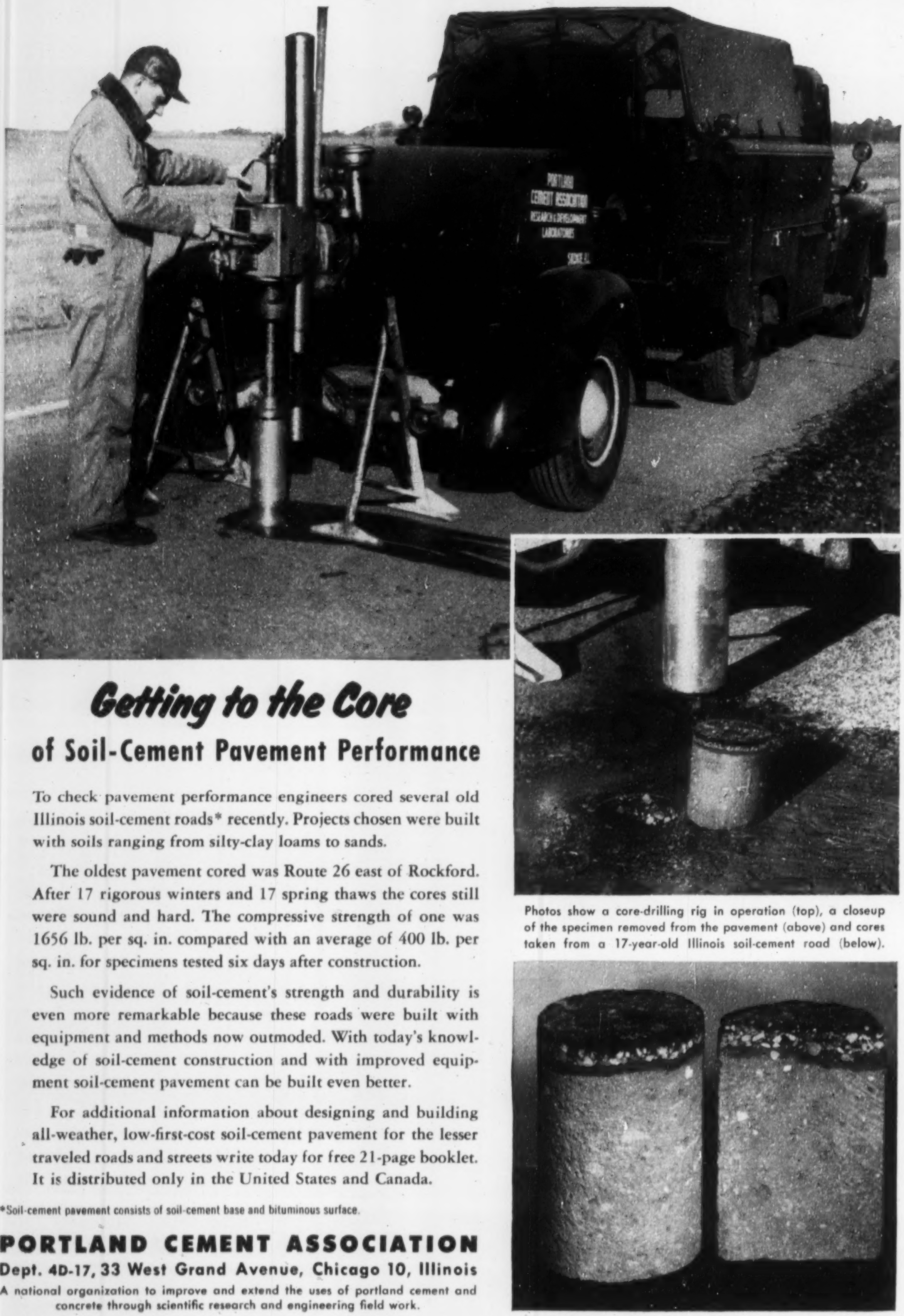

Photos show a core-drilling rig in operation (top), a closeup of the specimen removed from the pavement (above) and cores taken from a 17-year-old Illinois soil-cement road (below).

Getting to the Core

of Soil-Cement Pavement Performance

To check pavement performance engineers cored several old Illinois soil-cement roads* recently. Projects chosen were built with soils ranging from silty-clay loams to sands.

The oldest pavement cored was Route 26 east of Rockford. After 17 rigorous winters and 17 spring thaws the cores still were sound and hard. The compressive strength of one was 1656 lb. per sq. in. compared with an average of 400 lb. per sq. in. for specimens tested six days after construction.

Such evidence of soil-cement's strength and durability is even more remarkable because these roads were built with equipment and methods now outmoded. With today's knowledge of soil-cement construction and with improved equipment soil-cement pavement can be built even better.

For additional information about designing and building all-weather, low-first-cost soil-cement pavement for the lesser traveled roads and streets write today for free 21-page booklet. It is distributed only in the United States and Canada.

*Soil-cement pavement consists of soil-cement base and bituminous surface.

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A national organization to improve and extend the uses of portland cement and concrete through scientific research and engineering field work.

CONCRETE PIER will jut out 1,360 ft into the "old" part of Haifa, Israel.

Eastern Mediterranean seaports build up their cargo handling facilities

Haifa, Israel, Latakia, Syria, and Mersin, Turkey, all at the eastern end of the Mediterranean Sea, are undergoing extensive new harbor construction in plans to increase their capacity as major ports.

Main feature in the enlargement of Haifa's "old" port is the construction of an additional 1,360 ft of reinforced concrete pier 47 ft wide. The $2.5-million job is supported on concrete piles extending 42 ft to 78 ft down to the harbor bottom.

Building the new Haifa pier necessitated a great deal of dredging in the port and involved diverting and extending—beyond the pier—a major sewage outfall line. The outfall extension was built with concrete pipe, square in section, laid down in foundations placed on the harbor bottom. Contractors on the Haifa work are the Royal Netherlands Harbor Works, Amsterdam, and Solel Boneh, Ltd., Haifa.

• **Syrian work**—At Latakia, Syria, a mile-long breakwater, curving out into the Mediterranean to create a large outer harbor, is the key to an economic development program sparked by the fact that the country boosted its exports over its imports for the first time last year.

The $14-million harbor development at Latakia will provide mooring space for six ships, wharf space for two large and three smaller ships, and a turning circle. The harbor has been dredged to an overall depth of 37 ft. Contractors at Latakia are Ponorsko Gradevno Poduzece (Company of Marine Enterprises), Split, Yugoslavia. Designers are Sir Alexander Gibb and Partners of London, England.

(Continued on page 54)

SEAWALL protects base of new mile-long breakwater at Latakia, Syria.

Now
CONCRETE
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POROUS
MASONRY
can be made
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water repellent

Above or below grade masonry

ARMOR COAT

ARMOR COAT prevents above or below grade penetration of water in masonry constructions—such as basements, reservoirs, tunnels, etcetera. In addition to water repellent qualities, it is recommended for beautification of homes, commercial and industrial buildings.

During the war ARMOR COAT was used in waterproofing and decorating below grade military workings in England. Many types of paint were tried. ARMOR COAT was the only paint that combined excellent decorative features with high resistance to such severe water pressures below grade.

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SILINITE

SILINITE is the revolutionary water repellent discovery for use on porous masonry. This clear Silicone base compound gives longlife protection. Concrete, stucco, brick, tile, flagstone and sandstone, new or old, are inexpensively treated with SILINITE and retain their original color and texture. It penetrates, becoming a part of the masonry.

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Please send me complete information on how to keep porous masonry "Dry as the Desert."
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The LURIA system of STANDARDIZATION lowers your building costs and adds high speed to your expansion program

All the advantages of custom-built units are included in Luria Standardized Buildings. Designed for *durability*, Luria structures surpass the most stringent building code regulations. And Luria's standardized components are *engineered for adaptability*. They combine to successfully meet *individual* architectural needs. If these are the requirements of *your* expansion program, Luria can provide them for you... at less than the cost of custom-built units and in far less time.

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District Offices: ATLANTA • PHILADELPHIA • BOSTON • CHICAGO • WASHINGTON, D. C.

Work began this month on the construction and modernization of Samsun, on Turkey's Black Sea coastline, and the contract is to be awarded this month for improvements at the port of Mersin on Turkey's Mediterranean Shoreline. The Samsun work is estimated at $25 million and new installations will include two breakwaters 5,000 and 10,000 ft long.

Flood control experts urge closing of Dutch estuaries

The Delta Commission—set up by Holland last year to look into the problem of flood control—has issued its preliminary recommendations.

It urges the Dutch government to close off four estuaries, joining up the islands of Walcheren, North Beveland, Schouwen, Goeree and Voorne.

The commission holds that this work—including construction of dams—would require about the same amount of time (20-25 years) and money ($390-$520 million) as to strengthen existing dikes.

Syria seeks bank backing for three dam projects

The International Bank for Reconstruction and Rehabilitation is studying Syrian reclamation and irrigation plans in order to decide whether or not to finance construction of three dams—two on the Orontes River, one on the Euphrates.

The Orontes dams (candidates for a $62-million bank loan) are planned in connection with the 8-year, $32-million scheme to drain the Gharb marshes in central Syria. Reclamation is expected to be completed by the end of 1960. By 1962, 90% of its original cost should be recovered from revenues obtained from reclaimed land.

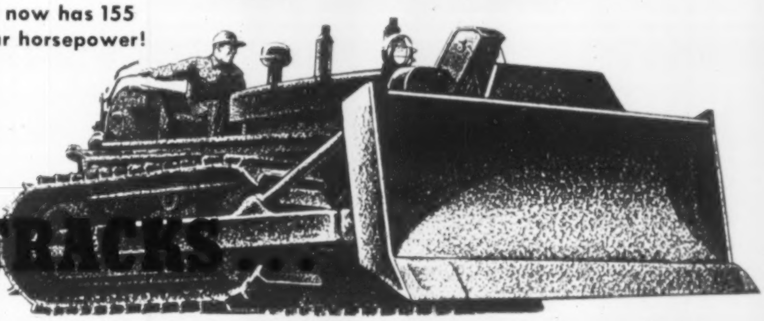
The Euphrates dam (a 98-ft-high one) would store flood waters for irrigating an 864,000-acre area in Syria and Iraq—and for supplying water to the Syrian city of Aleppo.

Way to reclamation

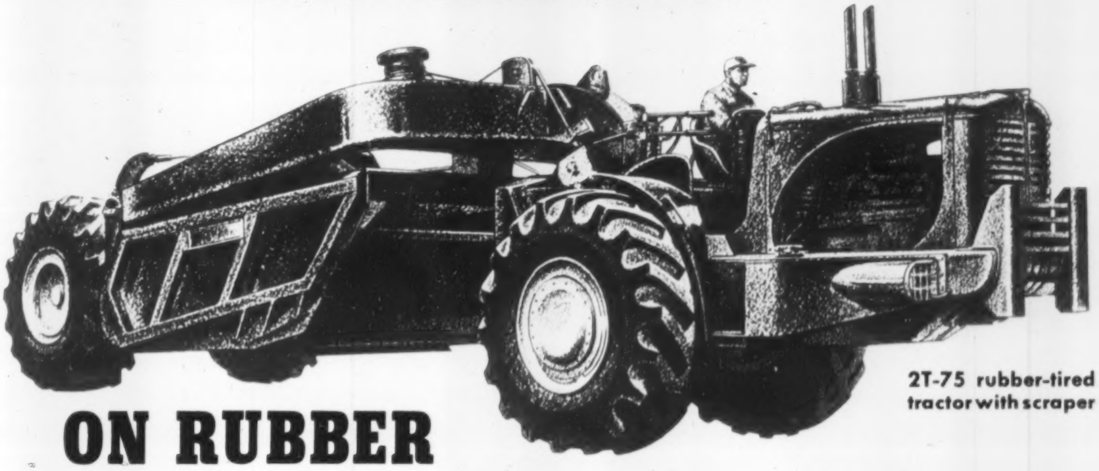
Egypt—pushing ahead plans for the second extension of its North Delta electricity scheme—is asking bids for construction of six pumping stations to help drain and reclaim 1,000,000 acres of marshes. Building sites: El-Deshoudi, El-Kalaa, Edku, Menufia East, Hanout and El-Wadi. (There will be 11 stations in all, but contracts for the other five already have gone to German firms.)

STILL THE CHAMP!

TD-24 now has 155 drawbar horsepower!



ON TRACKS...



2T-75 rubber-tired tractor with scraper

ON RUBBER

See it now at your INTERNATIONAL Industrial Distributors—a complete line of modern earthmoving equipment, led by the INTERNATIONAL TD-24, "The Champ" of crawler power and by the INTERNATIONAL two-wheel, rubber-tired tractors with scrapers.

Then see it in action on your own job—in a demonstration of INTERNATIONAL "power that pays."

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FOR EVERY MOVE IN EARTHMOVING

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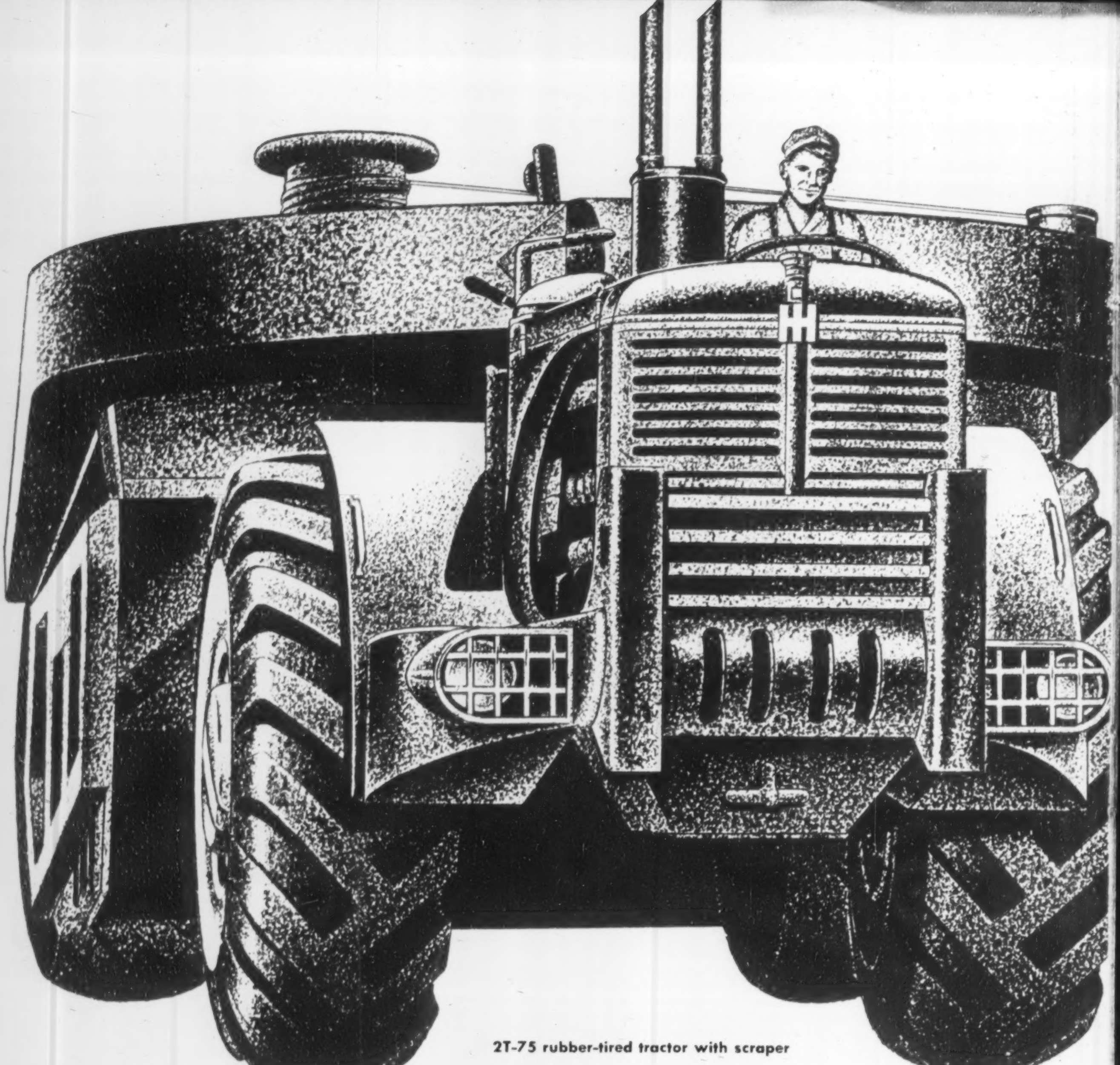

2T-75 rubber-tired tractor with scraper

- For Every

INTERNATIONAL presents a complete line of "Job-Phased" equipment—on tracks and on rubber for every earthmoving job.

- Seven rugged crawlers, led by the INTERNATIONAL TD-24.
- Twenty-two matching hydraulic and cable-controlled bulldozers and bullgraders.
- Four 4-wheeled scrapers.
- Two high-speed, two-wheel, rubber-tired tractors with scrapers (13 and 18-yard heaped capacity).
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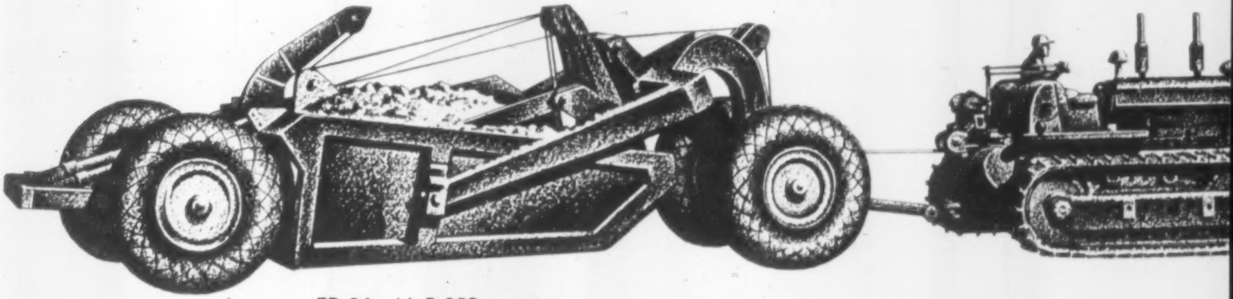
All under the INTERNATIONAL banner. All proved on-the-job for dependability and economy. All sold and serviced by men who know construction equipment and construction problems—the finest distributor organizations in the industry.

For full details on the *complete* line of INTERNATIONAL earthmoving equipment, check with your INTERNATIONAL Industrial Distributor today.

PAYLOAD EXPRESS. INTERNATIONAL 2T-75 rubber-tired tractor with heap-loaded scraper comes roaring around a tight curve in the cut.



TD-24 with B-250 scraper

HOW TO BUILD A DAM FAST. INTERNATIONAL TD-24 crawler dozes and tamps with 4 massive sheepsfoot rollers in a single operation.

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the hardest-working work teams in the world!

The new INTERNATIONAL team stars not only a full line of rugged red INTERNATIONAL crawlers, complete with INTERNATIONAL scrapers and bulldozers, but also high-speed INTERNATIONAL two-wheel, rubber-tired tractors with scrapers.

This means that now, more than ever, your INTERNATIONAL Industrial Distributor is "Earthmoving Headquarters" for your area. He offers you IH equipment to tackle any job, backed up by unsurpassed service facilities and parts supplies.

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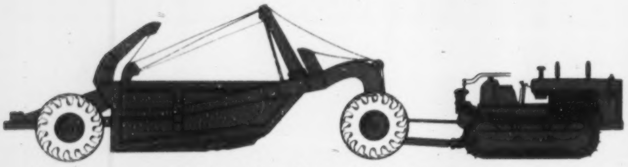
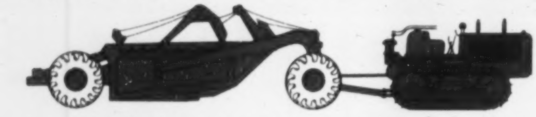
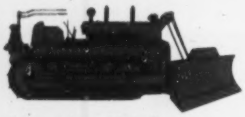
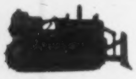
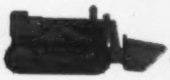

TD-24 crawler with matched scrapers

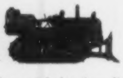

TD-18A crawler with matched scrapers

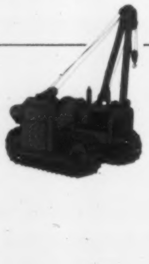

TD-24 crawler with bullgrader

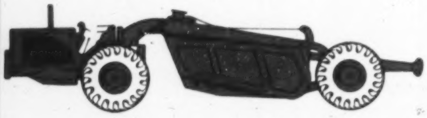
TD-14A crawler with cable bullgrader

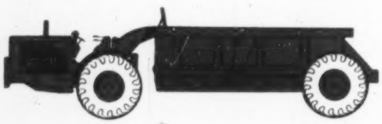

TD-9 crawler with hydraulic bulldozer

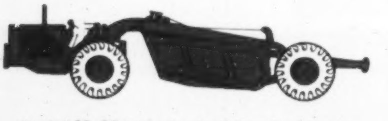

TD-9 tractor with front-end loader


TD-6 crawler with hydraulic bulldozer


TD-18A crawler with sideboom


Model 2T-75 two-wheel, rubber-tired tractor with 18 heaped-yard capacity scraper


Model 2T-75 two-wheel, rubber-tired tractor with 20 heaped-yard capacity bottom dump wagon


Model 2T-55 two-wheel, rubber-tired tractor with 13 heaped-yard capacity scraper

FIELD AND OFFICE

CORRUGATED CULVERT GETS MORTAR LINING to keep worn unit in service. Automatic lining machine starts through 18-in. pipe as foreman instructs operator.

Mortar lining extends culvert life

Believing it cheaper to line culverts under high fills rather than to replace them, the California Division of Highways has launched an extensive program of this type with the aid of a remote-controlled lining machine.

Mortar is mixed and pumped from a truck-drawn trailer that also carries power and control units. Within the machine itself, a screw forces the pumped mortar to a spreading head where rapid rotation throws it against the walls of the pipe.

The mortar is made up of equal parts of select sand and cement. Two coats are applied with only the second troweled. The foreman directs operations by means of a phone setup.

For the California work, equipment and men are supplied at an hourly rate by Pipe Linings, Inc., of South Gate, Calif., a licensee of the Centriline Corp. of New York. Directing the work for the California Division of Highways is Dale Ryman, District IV maintenance engineer.

Steel fabric reinforcing ironed out

New technique permits successful use of wire fabric in rolls rather than sheets for reinforcing bituminous resurfacing

The Texas Highway Department's Beaumont District has pioneered a new technique of reinforcing asphaltic concrete by using welded wire fabric in rolls (for use in Washington, D. C., see ENR Nov. 5, 1953, p. 27).

In resurfacing a five-mile stretch of highway, the Beaumont officials first widened the existing 20-ft pavement to 24 ft; then placed across the entire width a 1-in. leveling course of 100 lb per sq yd, Texas Type E sheet asphalt.

The fabric, 6x6-10/10, was laid directly on the tack-coated leveling course. A finishing machine was used to apply three courses of hot mix, Texas Type D, totaling 290 lb per sq yd and 3 in. in thickness. Tack coating was used between each course.

Trotti & Thomson, Inc., Beaumont contractors, devised the roll-handling procedures on the job. At the start of the operation, the end of the first 300-ft long, 11½-ft wide roll of fabric was interlaced with a ⅜-in. round rod. This rod was slipped behind a transverse

(Continued on page 60)

ATOMIC ENERGY PROJECT

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SWING SPEED makes PAY LOADS!

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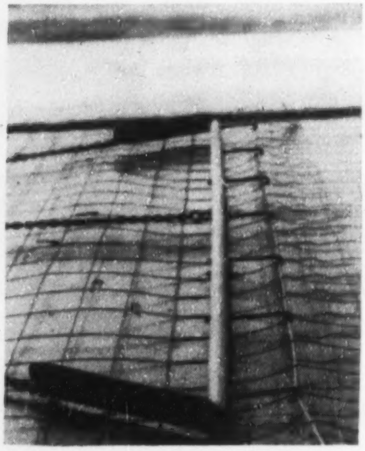
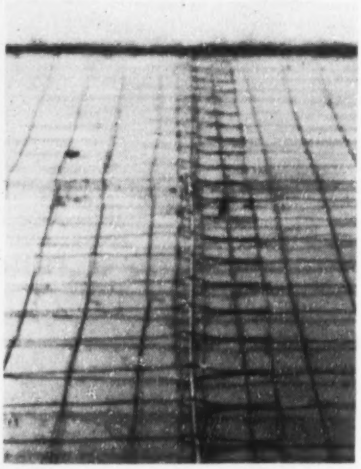


TENSIONING device is job made.



INTERLACED $\frac{3}{8}$-in. bar splices fabric.

row of short steel pegs driven into the existing pavement. The fabric was then unrolled and straightened by tension.

The tensioning device was fashioned on the job and consisted of three lengths of chain and a 9-ft pipe assembled to form a bisected triangle. Seven hooks spaced along the pipe caught and held the fabric while a light tension was applied to the lead chain. This lead chain was firmly secured—while still under tension—to an anchoring rod.

After paving the first quarter mile of the project it was found that some springy areas developed under traffic. This was caused by localized waviness and bulges of the fabric that occurred despite the tensioning device. It was necessary to go back over the section paved and snip some of the wires to reduce this springiness. It was concluded that some sort of hold-down device was needed.

A steel plate 12 ft long, 5 in. wide and about 1 in. thick was suspended by chains transversely under the paver just ahead of the spreader. This plate, beveled on the front end, slid along the fabric and "ironed" out the bumps and waviness that caused the difficulty in the first ¼ mi.

Still another tool was devised to eliminate persistent bulges. This was simply a short length of pipe, notched at one end and bent into a handle at the other. A worker, noting a wavy section of the fabric, merely dropped the notched end of the pipe over the wires, twisted the handle, thus easily and quickly "crimped" away the bulges.

After this sort of improvisation, the remainder of the 5-mi resurfacing progressed without a hitch. Rolls of fabric were spliced by interlacing a ⅜-in. round rod through the lapped ends of the rolls and twisting the overhanging longitudinal wires out of the way.

The contractor's bid price for placing the fabric in rolls was 22¢ a sq yd, including material costs, handling, insurance, equipment and profit. The job was under the supervision of E. R. Young, urban engineer.

Simple roof bolt extends tunnel life

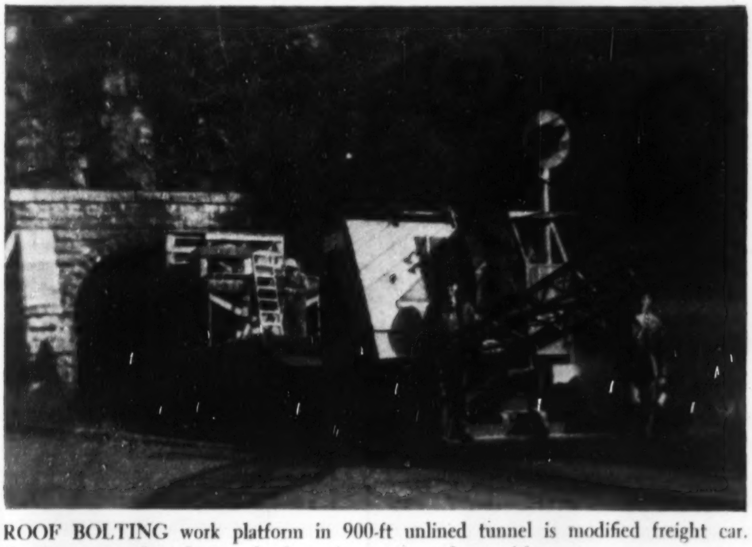
An Illinois Central Railroad tunnel is good for another lifetime of traffic, thanks to an inexpensive maintenance job. Key to the repair was the simple roof bolt, a mining device that has become useful in tunnel construction (ENR Mar. 26, 1953, p. 32).

Driven in 1872 through limestone at East Dubuque, Ill., the 900-ft single-track bore was not lined. Normal rock decomposition, speeded by steam locomotive fumes, had set up a loose-rock hazard.

The railroad decided to scale off the loose rock and to pin the remaining slabs to overlying rock strata. John Lickes, of Livingston, Wis., a man of experience with rock conditions in the Wisconsin-Illinois lead and zinc mining district, was engaged to supervise rock-trimming and roof-bolt installation. Work was done by a 4-man crew equipped with jackleg-mounted jackhammers. A working platform was built on top of a freight car, which was pushed in and out of the tunnel by a gasoline-powered crane.

About 800 bolts were installed, varying in length from 3 ft to 5 ft, and ¾ in. dia, they were anchored in 15/16-in. holes. Bolts were threaded at the outer end and split at the inner end. Anchorage was achieved with the aid of steel wedges inserted in the bolts' split ends. When a bolt was driven into a hole the wedge forced the split end to enlarge and stick fast in the hole. Then a 6x6-in. square steel plate ⅜ in. thick was pulled tight against the outside rock face by a nut on the bolt's threaded end. In this way a good solid brace was made.

Before work started a geological study of the tunnel was made by men from Wisconsin Institute of Technology, Platteville, Wis. M. Block, engineer of bridges, was in charge for the Illinois Central Railroad.



ROOF BOLTING work platform in 900-ft unlined tunnel is modified freight car. Gasoline-powered track crane hauls equipment in and out of bore.

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Clear, simple, and concise treatment of the properties of soils, the tests necessary to determine these properties, the application of test results to practical engineering problems and to site investigation procedure. Second Edition includes material on shear strength and bearing capacity, equilibrium moisture content, pavement design and flow net. **By P. L. Capper, Senior Lec. in Civ. Eng., Univ. of London, and W. F. Cassie, Prof. of Civ. Eng., Univ. of Durham. 2nd Ed., 315 pp., 138 illus., 29 tables, $6.50**

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A handy guide to precision in small-area surveying in the field and shop. Whether you are aligning machinery, planning construction, setting a jig, or making a map, it shows you the most accurate and rapid methods of surveying the job. Describes everything of importance from the care and use of instruments and equipment to practical techniques for solving hundreds of specific problems. **By P. Kissam, Princeton University. 384 pp., 260 illus., $5.00**

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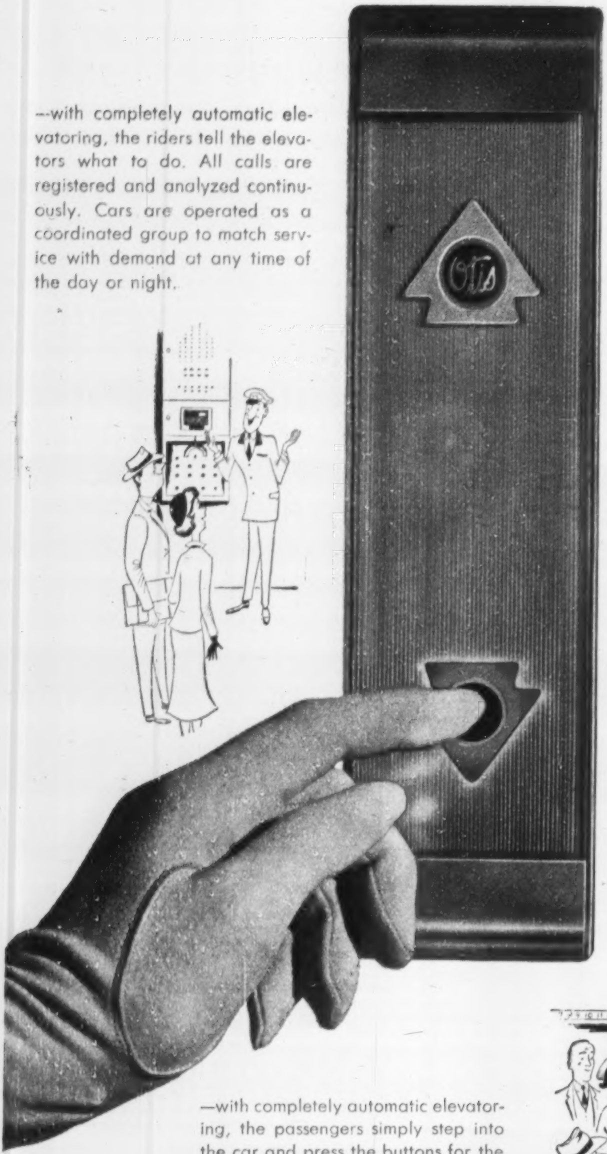

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- Macabee's Building

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Evanston, Illinois
- Washington Life Insurance Company

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- Seamen's Bank for Savings
- Singer Sewing Machine Company
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Oklahoma City, Oklahoma
- Hales Building

Peoria, Illinois
- First National Bank Building

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- Federal Reserve Bank
- Finance Building
- #3 Penn Center
- Rittenhouse Claridge
- Rittenhouse Savoy

Portland, Oregon
- Pacific Telephone and Telegraph Company
- University of Oregon Teaching Hospital

Reading, Pennsylvania
- Hotel Abraham Lincoln

St. Paul, Minnesota
- Minnesota Mining Company

San Francisco, California
- California Commercial Union
- Federal Reserve Bank
- Kohl Building
- Pacific Gas and Electric Company
- Shreve Building
- Union Carbide and Carbon Building
- University of California Teaching Hospital

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- Fourth & Pike Building

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BOOKS

How to design in steel

DESIGN IN STRUCTURAL STEEL—By John E. Lothers. 454 pp. Prentice-Hall, 70 Fifth Ave., New York 11, N. Y. $10.00.

In developing this subject, the author had three types of readers in mind—students, engineers in practice, and instructors. To accommodate the student, he necessarily had to adopt a simplified method of approach; for the engineer, he provides time-saving design methods; and for the instructor, there are many design problems.

The book should prove to be a very useful textbook, though it has some shortcomings. Quite often, explanations of how certain designs are intended to function are omitted. For example, in the treatment of split-beam connections, no reason is given for using this type of connection and no explanation of how it functions to achieve the purpose for which it is chosen. Another handicap is that experienced structural designers will find topics that they probably would like to review have not been included; rocker and roller supports, for instance.

The book is the fifth volume in a civil engineering and engineering mechanics series edited by Prof. N. M. Newmark, of the University of Illinois.

Engineers for industry

HOW TO ATTRACT AND HOLD ENGINEERING TALENT—Prepared by the Professional Engineers Conference Board for Industry of the National Society of Professional Engineers. 60 pp. Obtainable from the society at 1121 Fifteenth St., N.W., Washington 5, D. C. $2.00.

This is the third of a series of "Executive Research Reports" sponsored by the National Society of Professional Engineers. It relates primarily to engineers employed by industries rather than public agencies or private consultants, and like the two earlier reports was prepared by the society's Professional Engineers Conference Board for Industry.

Conclusions reached in the report are based on replies to questionnaires from 200 companies employing a considerable number of engineers and from 1,400 engineer employes.

Subjects covered include the adequacy of the scholastic training of the engineers, recruiting techniques, the goals of young engineers, the position of professionals as employes, benefits and incentives offered to engineers by industries, the impact of unions, and

(Continued on page 66)

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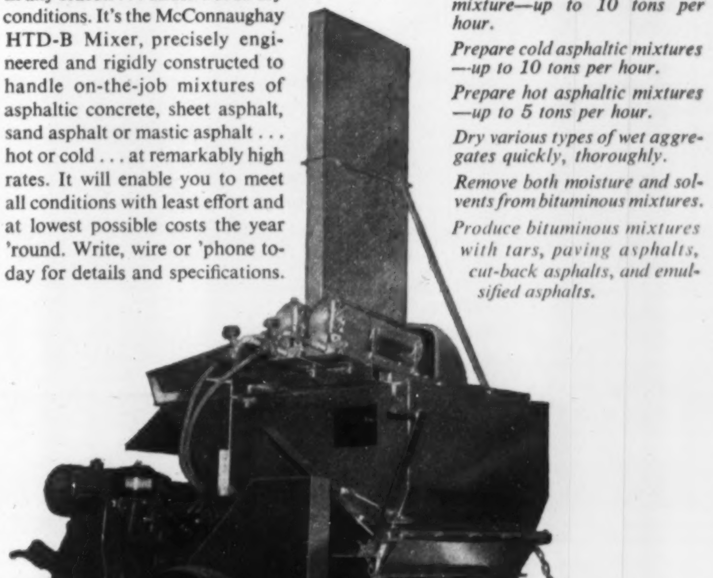

K. E. McCONNAUGHAY

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AUTHORNE P
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Constant weather exposure over the years caused the masonry of this building to disintegrate. If this unsightly condition had not been corrected it would have finally imperiled the structure of the building.

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BOOKS

a summary of conclusions as to the best methods for attracting and holding engineering employes.

The two questionnaires, with figures as to the number replying to each question, are given for the benefit of those who wish to draw their own conclusions from the replies.

Miscellaneous notes

- **Winter concreting,** a publication of the Danish National Institute of Building Research, has been translated into English. Copies of the translation, together with the Danish original, which contains the figures, may be obtained from the institute (20 Borgergade, Copenhagen, Denmark) for 18 krone.

- **A bibliography** on pumped storage for hydroelectric projects has been compiled by the Technical Library of the Tennessee Valley Authority. It covers articles published during the years 1928-1953. Copies may be obtained from the library at Knoxville, Tenn.

- **Salaries** paid state highway engineers as of Oct. 31, 1953, are covered in a tabulation compiled by the American Road Builders Association (World Center Building, Washington 6, D.C.) Recommended rates of the American Association of State Highway Officials are included for comparison.

- **New painting specifications** of the Steel Structures Painting Council are as follows: Paint Application Specification No. 1, Shop, Field and Maintenance Painting (50¢); Pretreatment Specifications; No. 1, Wetting Oil Treatment; No. 2, Cold Phosphate Surface Treatment; No. 3, Basic Zinc Chromate-Vinyl Butyral Washcoat; No. 4, Hot Phosphate Surface Treatment (25¢ each or 60¢ per set): Surface Preparation Specifications; No. 1, Solvent Cleaning; No. 2, Hand Cleaning; No. 3, Power-Tool Cleaning; No. 4, Flame Cleaning of New Steel; No. 5, Blast Cleaning to "White" Metal; No. 6, Commercial Blast Cleaning; No. 7, Brush-Off Blast Cleaning; No. 8, Pickling; and No. 9, Weathering and Cleaning ($1.00 for the set). Copies of these specifications may be obtained from the Secretary, Steel Structures Painting Council, 4400 Fifth Avenue, Pittsburgh 13, Penn.

- **Two reports** on government-sponsored research now available indicate

(*Continued on page 68*)

VETERAN COOK BLOCK CO. GETS INTO READY-MIX FIELD; PICKS ERIE PORTABLE TRUCK MIXER PLANT

CROSWELL, MICH., BUILDING SUPPLY FIRM SAYS: "ANY FURTHER ADDITIONS TO OUR PRESENT SET-UP WILL BE ERIE EQUIPMENT."

RALPH W. COOK, MANAGER

Recently the Cook Block Co., in the building supplies business for more than 40 years, wanted to expand their activities. The growing demand for concrete suggested that a ready-mix plant would make a worthwhile addition to their existing facilities.

When deciding on batching equipment, they chose Erie because they considered it properly engineered and well designed to do their specific job. Performance of this plant has proven their judgment right.

If you are contemplating entering the ready-mix concrete field or are considering replacing your present plant, learn the facts about Erie before you make any decision.

One man is all that's needed to run this plant for Cook Block Co. Equipment includes: Erie Portable Combination Bin model GTES-79 cu. yds. with EWEH 3-cu. yd. combination AggreMeter; 75 TPH aggregate elevator and 50 TPH cement elevator. Sold by Contractors Machinery Co., Detroit, Mich.

Cable Address: EXIMPORT. *Write for* Booklet GS, Dept. R44

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a disagreement between theoretical and measured stresses in curved metal tubes. Distribution and magnitude of shear stresses in which the bend radius is only two to three times the pipe radius differ greatly from those in a similarly curved rod, tests at the Naval Research Laboratory show. (When the bend radius is more than ten times the tube radius, theoretical stresses are sufficiently accurate.) Inaccuracy of present curve-tube, theory, one report suggests, may be caused by neglect of circumferential and radial shear stresses. "Characteristics of Pipe Bends under Applied Moments; Summary Report," PB111-292, Dec., 1953, a 22-page pamphlet, may be obtained for $0.75, and "Shear Stresses in Curved Tubes," PB-111249, Oct., 1953, an 11-page report, is available for $0.50, from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. Checks and money orders should be made out to the Treasurer of the United States.

New engineering books

ANALYSIS OF DEFORMATION — Volume One: Mathematical Theory—By Keith Swainger. 285 pp. Chapman & Hall, London, W.C.2, England Price 63s. Obtainable through the British Book Center, 122 E. 55th St., New York.

STATICS AND STRENGTH OF MATERIALS—By Roland H. Trathen 506 pp. John Wiley & Sons, 440 Fourth Ave, New York, 16, N. Y. $7.50.

PUBLICATIONS of the International Association of Bridge and Structural Engineering: 1953—366 pp. Published by Verlag Leemann, Stockerstrasse 64, Zuerich 39, Switzerland.

Reports and Pamphlets

GUIDANCE PROCEDURE FOR THE NEW YORK PROFESSIONAL ENGINEERS LICENSE—First Edition, 1954, Published by John D. Constance, 625 Hudson Terrace, Cliffside Park, N. J. $1.00.

PRESERVATION AND ENHANCEMENT OF NIAGARA FALLS—REPORT of the International Joint Commission United States and Canada, Washington, 25, D. C., and Ottawa, Ont.

SEDIMENTATION IN COLD SPRINGS RESERVOIR: Umatilla County, Ore. Soil Conservation Service, U. S. Department of Agriculture, Washington 25, D. C.

FREE-STREAMLINE ANALYSES OF TRANSITION FLOW AND JET DEFLECTION—Bulletin 35, State University of Iowa, Iowa City.

THE RELATIONS OF HEARING LOSS TO

BOOKS

Noise Exposure — American Standards Association, 70 East 45 St., New York 17, N. Y. $1.50.

Specifications and Test Methods for Ready-Mixed Concrete — National Ready Mixed Concrete Association, 1325 E Street, N. W., Washington, D. C. $0.40.

Plank-and-Beam System for Residential Construction—Construction Aid 4, Housing and Home Finance Agency obtainable from the Superintendent of Documents, Washington 25, D. C. $0.45.

Accident Facts—1953 Edition. National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. $0.75

Bridging the Gap Between School and College—The Fund For the Advancement of Education, 575 Madison Avenue, New York 22, N. Y.

Retention of Cover Stone by Asphalt Surface Treatments—Bulletin 133, Texas Engineering Experiment, Station College Station, Tex. Limited free distribution.

Welded Wire Fabric Reinforcement in Bituminous Resurfacing—Technical Bulletin No. 204, American Road Builders' Association, World Center Building, Washington 6, D. C.

Allocation of Highway Costs in Ohio by the Incremental Method—Ohio Department of Highways, Columbus, Ohio.

Design and Operation of Septic Tanks—Third European Seminar for Sanitary Engineers. World Health Organization, Published by Columbia University Press. 2960 Broadway, New York 27, N. Y. $1.50.

Descriptive Data of Sewerage and Sewage Treatment Systems in New York State—New York State Department of Health, Albany, N. Y.

Highway Research Board: Bulletins—No. 74, Traffic-Accident Studies (90¢); No. 75, Effect in Concrete of Pellet and Flake Forms of Calcium Chloride, (30¢); No. 76, Origin and Destination Surveys: Methods and Costs, (90¢); No. 77, Right-Of-Way Problems, ($1.05); No. 78, Filling and Sealing of Joints and Cracks in Concrete Pavements, (60¢); No. 79, Travel to Commercial Centers, (60¢); No. 80, Flexible-Pavement Design, (30¢); No. 83, Engineering Applications of Soil Surveying and Mapping, (1.05); Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Investigation of Wind Forces on Highway Bridges—Special Report No. 10, Highway Research Board, 2101 Constitution Ave., Washington 25, D. C. $0.60.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MAINE**—Maine Turnpike Auth., 17 Bishop St., Portland,

M. DeMatteo Constr. Co., 200 Hancock St., Quincy, Mass. CA **$1,696,009**, est. $1,609,000. Contr. 210 Sect. 2 grading, drainage, Portland to Augusta. CD 3/30, under LB.

▲ **MAINE**—Maine Turnpike Auth., 17 Bishop St., Portland,

Yonkers Constr. Co., 969 Midland Ave., Yonkers, N. Y. CA **$2,120,909**, est. $2,000,000. Contr. 209 Sect. 2 grading, drainage, Portland to Augusta. CD 3/30, under LB.

▲† **B. Perini & Sons, Inc.**, 73 Montwait Ave., Framingham, Mass. LB Schedules 1, 2 and 4 **$4,738,050**. Schedules 1, 3 and 4 **$4,907,880**, est. $5,000,000. addnl. hardstands, aprons, taxiway exten. maintenance hangar area, Limestone Air Force Base, ENG-19-016-54-72, LIMESTONE, ME. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. Bids Apr. 6. CD 3/23.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Campanella & Cardi Constr. Co., 780 Jefferson Blvd., Hillsgrove, R. I. LB **$314,239**, est. $300,000. reconstr. hy. Washington St. Auto Rte. 6, Fairhaven. Bids Apr. 6. CD 3/23.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

D. V. Frione Co., Inc., 87 Facon St., New Haven, Conn. CA **$2,398,842**, est. $2,400,000. F-344 (4) hy. constr. Amvets Memorial Hy., Brockton. CD 3/15, under LB.

▲† **F. D. Rich Co., Inc.**, 322 Main St., Stamford, Conn. CA **$2,265,059**, est. $2,500,000-$5,000,000. double cantilever maintenance hangar, Hanscom Air Force Base, ENG-19-016-54-45, BEDFORD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 4/1, under LB.

▲† **Wexler Constr. Co.**, 118 Needham St., Newton Highlands, Mass. CA **$1,123,419**, est. $1,500,000. constr. 4 airmen's dormitories, 500-man mess, Hanscom Air Force Base, ENG-19-016-54-73, BEDFORD, MASS. U. S. Eng., 857 Commonwealth Ave., Boston, Mass. CD 4/1, under LB.

▲ **Morrison-Knudsen Co., Inc., C. J. Maney Co., Inc., and Peter Kiewit Sons Co.**, 122 E. 42 St., New York, N. Y. LB **$11,874,944**, est. $13,000,000. Contr. 210 drainage tunnel Ward St. Pumping Station to Deer Island (sewers), Roxbury and Boston, BOSTON, MASS. Commonwealth of Mass., Metropolitan Dist. Comn., Constr. Div., 20 Somerset St., Boston, Mass. Bids Apr. 8. 3/15.

BUILDINGS

LOW BIDS AND CONTRACTS

D. A. Sullivan & Sons, Inc., 82 North St., Northampton, Mass. LB **$354,872**. men's DORMITORY, AMHERST, MASS. University of Mass., Alumi Bldg., Alden C. Brett, pres., Amherst, Mass. Bids Apr. 6. CD 3/24.

▲ **E. & F. Construction Co.**, 94 Wells St., Bridgeport, Conn., CA, **$17,500,000**, helicopter PLANT, Osongue Section, STRATFORD, CONN. Sikorsky Aircraft Div., United Aircraft Corp., South Ave., Bridgeport, Conn. Bids Apr. 5. CD 3/24.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

N.Y., Greenwood Lake—B.A. 5/10—Village, Village Office in Fire Dpt. Bldg., Greenwood Lake, Sec. I, pumping station with water mains and accessories, Pine Hill Dr., Maple Ave., Hillcrest Ave., Cedar Ave., Glendale rd., Oakwood Ave., Hillside Ave., Mountain View Ave., and other streets and properties; Sect. II, water mains, accessories in Lakelands Ave.; Sect. III, Lake Dr. and private road from Birch Dr. to Tuxedo Rd; Sect. IV, extending water mains and accessories to and in Cascade Trail; Sect V, furnishing and installing 100,000 gal. steel storage tank on foundations furnished by others. Plans deposit $25. Keis & Holroyd, 257 Broadway, Troy, N.Y. consult. engrs. adv. ENR 4/15.

BIDS ASKED—BUILDINGS

▲ **Md., Towson**—OFFICE—B.A. 4/29—Comrs. Baltimore Co., Court House, 3 story, 208x208 ft., steel, rein.-conc., brick, concrete block county office, Chesapeake Ave. $2,000,000. Plans deposit $100, Wm. F. Stone, 2612 N. Charles St., Baltimore, archt. Egli & Gompf, 1019 N. Calvert St., Baltimore, mech. engrs. Rummel, Klepper & Kahl, 1021 N. Calvert St., Baltimore, struct engrs. CD 12/21.

New Jersey—BUILDINGS—B.A. 4/29—New Jersey Hy. Auth., State Hy. Dpt., Office Bldg., 1035 Parkway Ave, Trenton, Contr. 164G, general construction; Contr. 164SS, structural steel work, Contr. 164P, plumbing work, Contract 164HV, heating, ventilating and air conditioning work, Contr. 164E, electrical work, of buildings, for Cheesequake Service Area in Borough of Sayreville, Middlesex Co. and Forked River Service Areas, in Lacey Twp., Ocean Co. Plans deposit $10.

N. J., West Englewood—SCHOOL—B.A. 5/14—Bd., Teaneck High School, Elizabeth Ave., Queen Anne Rd., Teaneck, John Greenleaf Whittier School No. 4 addn., West Englewood Ave. and Essex Rd. Plans deposit $25. Charles S. Cleveland, 241 Main St., Hackensack, archt.

SOON LETS CONTRACT—BUILDINGS

▲ **N. Y., New York**—COLLEGE OF MEDICINE—Yeshive University, 270 Park Ave., Zone 17, soon lets contract. Contr. 2, superstructure for Albert Einstein College of Medicine of Yeshiva University. Total est. $10,000,000. Kelly & Gruzen, 80 Fifth Ave., Zone 11, archts. CD 2/26.

▲ **Pa., Shiremanstown**—WAREHOUSE—B.A. 4/20—G. R. Kinney Co., 403 S. 2nd St., Harrisburg, soon lets contract warehouse, near Simpson Ferry Rd. just east of borough. $2,000,000. Lacy, Atherton & Davis, 1729 N. Front St., Harrisburg, archts.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Edward Acker Corp., 128 E. Broadway, Port Jefferson and **South Shore Contg. & Dredging Corp.**, 100 West Ave., Patchogue, N. Y., LB, **$158,549**. exten. existing west stone jetty at Shinnecock Inlet and erection of a 25-ft. light tower on end of the extens., Suffolk Co. NEW YORK. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, Bids Apr. 8. CD 3/16.

▲ **NEW YORK**—Bureau of Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany,

New York Materials, Inc., Fort Edward, N. Y., LB, **$175,368**, est. $222,000, resurf. with 22-ft. b. conc., 5.65 mi. Rte. 28, from Glen at west end of bridge over Hudson River northwestward to Rte. 8 intersection near Wevertown, Warren Co.;

Ador & Booth, Inc., 1130 Water St., Watertown, N.Y., LB, **$285,633**, est. $349,000, widening to 22 ft., b. conc. resurf. 6.48 mi. Rte. 3, in five separate sects. between Fine and the St. Lawrence-Lewis Co. line, north of Harrisville, St. Lawrence Co.;

Binghamton Constr. Co., Inc., Marine Midland Bldg., Binghamton, N. Y., LB, **$159,733**, est. $167,000, widen to 36 ft., b. conc. resurf. 0.95 mi. sect. Rte. 11 in Town of Barker, southeast of Whintye Point, from vicinity of property owned by Edgar Kleine extending north and northwestward to point near propproperty of Merton Knapp, Broome Co.; LB **$168,218**, est. $177,000 widen to 36 ft., b. conc. resurf. 1.09 mi. Rte. 12, in Town of Chenango, from Kattleville in vicinity of properties owned by Jane Kattel and Delmont Heath and extending northward toward Chenango Forks to point near property of Ward Brooker, Broome Co.;

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Latin America
Public Buildings
Commercial Buildings
Industrial Buildings
Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	**Federal Government**
▲	**Project of $1,000,000 or over.**
B.A.	**Bids Asked**
ENR	**Engineering News-Record**
CD	**Engineering News-Record Construction Daily**

City Constr. Co., 640 Jay St., Utica, N. Y., LB, **$219,654**, est. $245,000, widen to 24 ft., b. conc. resurf. 3.66 mi. Rte. 12 in Hubbardsville-East Hamilton area, from 1½ mi. south of E. Hamilton northeastward through E. Hamilton and Hubbardsville to point near Hamilton-Brookfield town line ,approx. 1 mi. to east of Hubbardsville, Madison Co.;

Thomas F. Coluccia & Sons, 228 S. Washington St., Rome, N. Y., LB, **$190,022**, est. $232,000, wide to minimum of 24 ft., b. conc. resurf. 2.85 mi. Rte. 233, from Rte. 5 intersection, west of Kirkland, extending northward through Westmoreland to point approx. 200 ft. south of an access road to the State Thruway, Oneida Co.;

Good Roads Engr. & Contr. Co., Burns Ave., Wantagh, N. Y., LB, **$457,643**. est. $613,000, widen to 24 ft., b. conc. resurf., 6.08 mi. portion Rte. 25A, from intersection of Station Rd. and Hallock Rd., east of Port Jefferson Station, extend eastward through Rocky Point to approx. 500 ft. east of Jackson Ave., Suffolk Co.;

Green Island Constr. Co., 594 Broadway, Watervliet, N. Y., LB **$459,034**, est. $545,000, widen to 20 ft., bit. macad. and general reconstr. along two sections 8.11 mi. Rtes. 26 and 80 in northern Chenango Co.;

Holmes & Murphy, Inc., Bank St., Orchard Park, N. Y., LB **$200,500**, est. $221,000, widen to 24 ft., b. conc. resurf., 2.87 mi. Rte. 15, from Cohocton approx. 2,300 ft. inside the corporation line, extending northwestward to point approx. 3,400 ft. beyond the Cohocton-Wayland town line, Steuben Co.;

Daniel F. MacNamee & Co., Inc., 271 North Ave., New Rochelle, N. Y., LB **$141,531**, est. $158,000 resurf. with 20-ft. b. conc. along two sects., Rte. 52, 2.92 mi. between Stormville and Carmel, Dutchess and Putnam Counties;

George B. McKenna & Son, Norwood, N. Y., LB **$141,552**, est. $188,000. resurf. with 20 ft. b. conc. along sect. of Rte. 56A, from east of Grass River near Madrid, extending southeastward through Burnham Corners toward Potsdam 5.11 mi., St. Lawrence Co.;

Peckham Road Corp., 50 Harlem Ave., White Plains, N. Y., LB **$160,228**, resurf. with 27 ft. b. conc. 2.85 mi. Rte. 9 from Red Hook-Rhinebeck town line, extending southwestward to point in Rhinebeck approx. 600 ft. south of the entrance to the Fair Ground, Dutchess Co.;

John C. Peterson Constr. Corp., 958 Church St., Baldwin, N. Y., LB **$156,759**, est. $157,000, resurf. 0.57 mi. portion Main St. (Rte. 25A), in Huntington, from west of Woodbury and West Neck Aves., extending eastward to east side of Prime Ave., Suffolk Co.;

R. A. Petta Constr. Co., 125 Wilson St., Syracuse, N. Y., LB **$189,742**, est. $239,000. widen to minimum of 24 ft., b. conc. resurf. 3.98 mi. Rte. 7, from Schoharie-Otsego co. line and extend eastward to Rte. 10 intersection in Richmondville, Schoharie Co.;

Potter-DeWitt Corp., Pavilion, N. Y., LB **$119,150**, est. $125,000, widen to 22 ft., b. conc. resurf 1.21 mi. Rte. 224 from point northwest of Hollow Creek, southeast of Swartwood, extending southeastward toward Van Etten to point southeast of Johnson Creek, Chemung Co. Bids Apr. 8. CD 3/16.

A.G.A. Division of Elastic Stop Nut Corp. of America, 2330 Vaux Hall Rd., Union, N. J., LB **$164,666**. furnishing, erecting 346 traffic signs to be placed at 35 traffic interchanges on state Thruway between Suffern and Buffalo, Albany, Greene, Schenectady, Herkimer, Madison, Montgomery, Oneida, Cayuga, Onondaga, Seneca, Genesee, Monroe, Ontario, Erie, Orange, Rockland and Ulster Counties, NEW YORK. Bureau Contracts & Accounts, The Governor Alfred E. Smith State Office Bldg., Albany, N. Y. Bids Apr. 8. CD 3/11.

Town, Fenner, N. Y. Own Forces. **$152,190**. 202 mi. roads, FENNER, N. Y. CD 10/17/51.

▲ **PENNSYLVANIA**—State Hy. & Bridge Auth., 506 North Office Bldg., Harrisburg,

Ralph Myers Contg. Co., Pitcairn, Pa., LB **$2,037,077**. constr. divided hy., 30,931 ft. of crushed aggregate base with bit. surf. variable in width each side of concrete divisor, one I-beam and two plate girder bridges, T. R. 31, Westmoreland Co.;

Keeler Constr. Co., Pennsburg, Pa., LB **$453,788**, constr. 7,060 ft. divided road of c.-conc. pavement variable in width on each side concrete divisor, T. R. U. S. 202, Montgomery Co. Bids Apr. 9. CD 3/18.

BUILDINGS

LOW BIDS AND CONTRACTS

William Tendler & Herman Kishner, 215 Montague St., Brooklyn 2, N. Y. Owner Builds. **$960,000**. two 6 story APARTMENTS, 10-40 E. 43 St., BROOKLYN, N. Y. CD 2/10.

(Continued on page 92)

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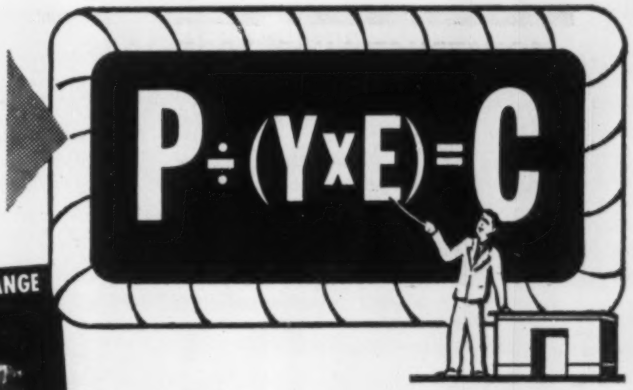

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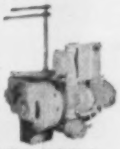

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(Continued from page 70)

Whitney Apartments, c/o Schulman & Soloway, archts., 100-15 Queens Blvd., Forest Hills, N. Y., Separate Contracts. **$650,000.** 6 story APARTMENT, Hampton St. and Whitney Ave., ELMHURST, N. Y. CD 1/28.

▲ **Bregman Bros.**, c/o Greenberg & Ames, archts., 303 Fourth Ave., New York 10, N. Y. Separate Contracts. **$1,750,000.** 14 story APARTMENT, W. 190 St. from Fort Washington Ave. to Cabrini Blvd., NEW YORK, N. Y. CD 1/20.

George A. Fuller Co., 597 Madison Ave., New York 22, N. Y. CA. **$900,000.** altering 340-48 W. 55 St. to be HOME FOR AGED, NEW YORK, N. Y. Roman Catholic Archdiocese of New York, 477 Madison Ave., New York 22, N. Y. CD 1/26.

Weny Bros. & Storms Co., McLean Blvd., Paterson, N. J. CA Est. **$750,000.** 60,000 sq. ft. chemical equip. mfg. PLANT, FAIR LAWN, N. J. Fisher Scientific Co., 717 Forbes St., Pittsburgh 19, Pa. Epple & Seaman, 100 Belmont Ave., Newark, N. J., archts.

▲ **Mahony-Troast Constr. Co.**, 657 Main Ave., Passaic, N. J. CA Est. **$3,000,000.** 9 story Y.M. and Y.W.C.A. BUILDING, Broad and Rector Sts., NEWARK, N. J. Y.M. and Y.W.C.A., 1107 Halsey St., Newark, N. J. Bids Feb. 16. CD 2/17.

▲ **William F Hotz**, Adams Ave. and Orthodox St., Phila., Pa., CA **$2,000,000.** lithographing and coating PLANT, (Crown Can Co., lessee), PHILA., PA. Pennsylvania R.R., C. J. Henry, ch. engr. (Eastern Region), Suburban Station Bldg. 1617 Pennsylvania Blvd., Phila. 4, Pa. CD 9/13/51.

▲ **Foster Wheeler Corp.**, 165 Broadway, New York, N. Y. CA **$3,500,000.** design and construct 3 hydrofining units for disulfurizing and generally imprv. quality of naphtas and heating oils, construct hydroforming unit for octane upgrading of heavy naphthas, at REFINERY, BALTIMORE, MD. Esso Standard Oil Co., 15 W. 51 St., New York, N. Y. Bids Mar. 19. CD 3/17.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **Fla., Panama City**—FUELING SYSTEM—B.A. 4/29—U. S. Eng., 2301 Grant St., Mobile, Ala., jet fueling system, and jet fuel pipe line, pumping station, etc., Tyndall Air Force Base.

† **Tennessee**—B.A. 4/29—U. S. Eng., P.O. Box 97, Memphis Zone 1, constr. Sect. 7 levee and reservoir slope repair in City of Memphis, on left bank of Wolfe River, Shelby Co., Serial No. CIVENG-40-041-54-108.

† **Ala., Selma**—CONTROL TOWER—B.A. 5/4—U. S. Eng., P.O. Box 1169, Mobile, Zone 7, encased control tower, Craig Air Force Base, CD 7/18/51.

† **Ala., Montgomery**—MESS—B.A. 5/5—U. S. Eng., P.O. Box 1169, Mobile 7, Ala., officers' mess bldg. addn., Gunter Air Force Base. CD 11/20/52.

BIDS ASKED—BUILDINGS

† **Ala., Fort McClellan**—DISPENSARY—B.A. 5/4—U. S. Eng., P.O. Box 1169, Mobile, Zone 7, regimental dispensary, incl. heating, ventilating, electrical sys., misc. equip., concrete sidewalks, storm drains, W.A.C. Training Area. CD 4/8.

▲ **Ky., Fort Knox**—HOSPITAL—B.A. 5/11—U. S. Eng., 380 W. Broadway, Louisville, station hospital, Eng-15-029-54-55, $7,500,000. Plans deposit $100. New bid date, York & Sawyer, 101 Park Ave., New York, N. Y., archts. CD 4/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

W. R. Aldrich & Co., 2493 Baywood Ave., Baton Rouge, La. LB **$1,022,244.** grading, rein.-con. box culverts hy. overpass consist of one 41 ft., three 50 ft. I-beam spans, railway underpass two 41 ft., two 50 ft. spans, 1.197 mi. East Baton Rouge Expressway, S.P. 714-01-75, F.A.P. U-414, East Baton Rouge Parish.

G. E. Steed, Cotton Valley, La. LB **$78,251.** flexible base course, soil cement base course, bit. surf. (asph. cement) 5.15 mi. Fillmore-Bellvue Hy. State Rte. 184, S.P. 82-04-05, Bossier Parish;

Barnshill Bros., Many, La. LB **$74,772.** shaping roadway, grav. base course, iron ore base, soil cement base course, bit. surf. tr. 5.272 mi. Acadia-Corinth Hy., State Rte. 102, S.P. 89-06-04 and 308-07-04, Lincoln Parish;

W. R. Core, Glenmora, La. LB **$158,676.** shaping roadway, repairs to creosoted timber trestle bridges grav. base course, soil cement base course, bit. surf. tr. (asph. cement) 8.673 mi. State Line Angie Hy., State Rte. 262, S.P. 274-03-05, Washington Parish. Bids Mar. 31. CD 2/26.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Daleview Homes, Inc.**, 614 12th St., N.W. Wash., D. C. Owner Builds. Approx. **$1,400,000.** 112 one and 1½ story masonry RESIDENCES, FAIRFAX, VA. Morton Noble, 1218 "H" St. N.W., Wash., D. C., archt.

▲ **Morrell Constr. Co.**, Rose Hill Farms, Rte. 6, Alexandria, Va. Owner Builds. Approx. **$19,000,000.** 1,200 one story masonry RESIDENCES, near FRANCONIA, VA.

▲ **Michnick & DiMaio**, 1520 "K" St., N.W. Wash., D. C. Owner Builds. **$5,500,000.** 450 one and two story masonry, frame RESIDENCES, SPRINGFIELD, VA. Philip W. Mason, 8511 Colesville Rd., Silver Springs, Md., archt.

Interstate Constr. Co., 2317 S. Blvd., Charlotte, N. C. CA **$522,924.** LIBRARY and DORMITORY BLDGS., MARS HILL, N. C. Mars Hill College, Mars Hill, N. C.

Six Assocs. Inc., 1095 Hendersonville Rd., Asheville, N. C. archt. Bids Apr. 2.

Lionel F. Favret, 937 Gravier St., New Orleans, La. **CA $507,705.** partial 2 story, 1 story masonry Junior High SCHOOL, HOUMA, LA. Terrebonne Parish School Bd., Houma, La. Bids Mar. 30. CD 3/16.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **O., Columbus**—HEADQUARTERS BLDG.—B.A. On Or About 5/21—U. S. Eng., 237 Fourth Ave., Huntington, W. Va., two 2 story face brick, or concrete block walls, concrete floors, each approx. 36x170 ft. headquarters bldgs., with appurtenant connections to existing water lines, sanitary sewers, electrical distr. sys.; constr. approx. 260 lin. ft. 6 in. storm drain; 80 lin. ft. 11x18 ft. pipe arch culvert; 40 lin. ft. 22x13 ft. pipe arch culvert; constr. approx. 3,000 sq. yd. paving of either 6 in. crushed aggregate base with bit. seal coat or 6 in. water bound base with 2 in. thick b. conc. surf. course, Lockbourne Air Force Base about 10 mi. southeast of here, Serial No. ENG-46-022-54-21. Plans deposit $5.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **OHIO**—State Hy. Dpt., Columbus,

Rhoten Constr. Co., 16 E. Broad St., Columbus, **O., CA $718,253,** est. $761,800, type T-35 on **B-20 and** structures 5.662 mi. U.S.R. 30-S, **Sects. (22.19-26.29)**, 0.00, Marion and Morrow Counties;

H. W. Holt & Son, 3150 Valleyview Dr., Columbus, **O.,** CA **$1,012,474,** est. $1,247,000, Type T-71 and structure 5.47 mi. U. S. R. 50, Sect. **25.68, Athens** Co. Bids Mar. 30. CD 4/7, under LB.

▲ **H. W. Miller Constr. Co.,** 1511 Neave St., Covington, Ky. CA **$5,012,940,** est. $5,541,182, Mill Creek Sewage Disposal Plant on Gest St., sludge digestion tanks, heating gas facilities and misc. work, CINCINNATI, O. City, City Hall, Cincinnati, O. Awarded Apr. 9. CD 7/1/43.

▲ **Haverstick Builders, Inc.,** c/o J. B. Haverstick, 2412 Far Hills St., Dayton, O. Owner Builds. **$1,000,000.** 83 HOMES in area between Wilmington Pike and Smithville Rd., DAYTON, O.

▲ **John Wile Constr. Co.,** 826 Hamler Ave., Louisville, Ky., CA, **$1,785,319,** general contract New Albany JUNIOR HIGH SCHOOL, MECHANICAL ARTS BLDG. at Senior High School, NEW ALBANY, IND. New Albany School Bldg., Auth., New Albany, Ind. Bids Apr. 4, awarded Apr. 7. CD 4/12, under LB.

▲ **Gebhard-Berghammer, Inc.,** 5420 W. State St., Milwaukee 8, Wis., CA, **$1,095,400,** general contract Deaconness HOSPITAL addn., MILWAUKEE, WIS. Evangelical Deaconnes Hospital, 1821 W. Wisconsin Ave., Milwaukee 3, Wis. Bids Mar. 9. CD 3/31, under LB.

▲ **Jeffries-Dyer Co.,** P.O. Box 378, Ann Arbor, Mich. CA **$1,759,000.** children's INSTITUTION for psychiatric treatment, ANN ARBOR, MICH. Bd. Regents, University of Michigan, Ann Arbor, Mich. Bids Mar. 16. CD 2/18.

▲ **Darin & Armstrong, Inc.,** 2041 Fenkell St., Detroit 38, Mich. CA Est. **$1,000,000.** 1 story, press SHOP, steel STORAGE addn., FLINT, MICH. Fisher Body Div., General Motors Corp., Flint, Mich. CD 2/12.

E. W. Graft Constr. Co., 2870 Harrison St., Saginaw, Mich. CA **$71,040.** 6 in. c. conc.;

Saginaw Asphalt Paving Co., Saginaw, Mich. CA **$276,289.** 6 and 7 in. b. conc., C-485, SAGINAW, MICH. City, C. A. Miller, city mgr., Saginaw, Mich. Bids Mar. 16. CD 3/3.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Sam W. Emerson Co.,** 1836 Euclid Ave., Cleveland 14, O., CA Est. **$3,000,000.** general constr. 258,000 sq. ft. mfg. space, PLANT, CLEVELAND, O. Electric Controller & Mfg. Co., 2700 E. 79 St., Cleveland 4, O. CD 3/30.

▲ **John Wile Constr. Co.,** 826 Humler St., Louisville, Ky. LB **$1,080,000.** New Albany Junior HIGH SCHOOL, academic bldg., auditorium, recreation bldgs., NEW ALBANY, IND. New Albany School Bldg. Corp., New Albany, Ind. Bids Apr. 4. CD 3/10.

Cahokia Land & Development Co., Oliver L. Parks, pres., Cahokia, Ill. Own Forces. **$500,000.** 115 prefabricated RESIDENCES, concrete fdn., in De Paul Gardens Subdivision, Rte. 157 east of CAHOKIA (EAST ST. LOUIS P. O.), ILL. Charles M. Goodman, Lafayette, Ind., archt.

▲ **Herlihy Mid Continent Co.,** 135 S. La Salle St., Chicago 3, Ill., CA, **$1,083,616,** PARKING, GARAGE, north side of River at La Salle St., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Feb. 8, awarded Mar. 26. CD 2/16, under LB.

Precour Constr. Co., Oshkosh, Wis. LB **$728,500.** general contract high SCHOOL addn., PORT WASHINGTON, WIS. Bd. Educ., Port Washington, Wis. Bids **Apr. 2. CD 3/16.**

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

† **South Dakota**—B.A. 5/4—U. S. Eng., 1709 Jackson St., Omaha, Neb., main control boards, motor-generator sets, inverter set and relays for Gavin Point Reservoir, near Yorktown, Inv. 25-066-54-128 Extended date. CD 2/17.

† **Texas**—B.A. 5/11—U. S. Eng., 100 W. Vickery St., Fort Worth, flood protection at Alice, San

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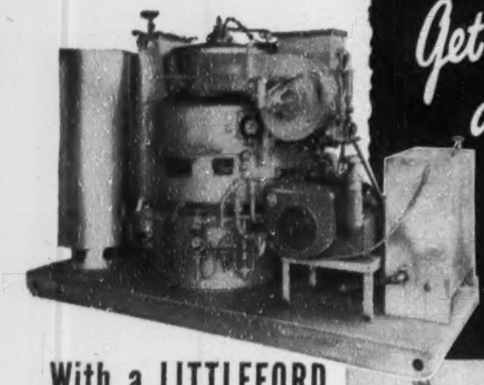

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GENERAL OFFICES—ALLENTOWN, PENNA. U.S.A.
MANUFACTURERS OF THE CEMENT GUN

Diego Creek, Baffins Bay Drainage Area, Jim Wells Co., approx. 44 mi. west or Corpus Christi, Inv. No. CIVENG-41-443-54-38. CD 6/9/44.

BIDS ASKED—BUILDINGS

† **Texas**—B.A. 4/29—Soil Conservation Service, Dpt. Agriculture, 3600 McCart St., Fort Worth, No. 147-54, waterflow retarding structures with earthfill embankments, etc. on Murphy Lake, lower east side of Trinity River watershed, approx. 3½ mi. southeast of Crandall.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Gjellefald Assocs., Forest City, Ia., LB **$433,093,** Sect. 1, Subsection C, sewers, CEDAR RAPIDS, IA. City, Cedar Rapids, Ia. H. R. Green Co., 417 1st Ave. S.E., Cedar Rapids, Ia., engr. Bids Mar. 14.

J. J. Parks Co., 2818 Ed. Creighton Ave., Omaha, Neb., LB **$195,404,** est. $225,000. Contr. 54-1 through 8, street resurf.;

General Contractors, 3301 Pratt St., Omaha, Neb., LB **$215,946,** Contr. 54-9 through 15, street resurf. OMAHA, NEB. City, City Hall, 18 and Farnam Sts., Omaha, Neb., Bids Apr. 6. CD 3/22.

▲ **R. H. Fulton, Box 1526, Lubbock, Tex., CA $3,999,703.** 50 mi. 20 in. gas pipe line from Morton Co., Kansas gas field to point of connection with Natural Gas Pipe Line Co., near Hooker, Okla., constr. dehydration plant in Morton Co., OKLAHOMA-KANSAS. Colorado Interstate Gas Co., Colorado Springs Natl. Bank Bldg., Colorado Springs, Colo. CD 11/27.

▲ **OKLAHOMA**—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

Smith Bros., Noble, Okla., CA **$67,827,** est. $79,343, rock base, double bit. surf., 1.25 mi. No. 31, at Quinton, Pittsburg Co.; CA **$126,861,** est. $162,129, rock base, double bit. surf. 7.38 mi. No. 31, at Quinton, Pittsburg Co.;

Pool Constr. Co., Shawnee, Okla., CA **$71,289,** est. $96,239, grade and drainage 3.58 mi. Hy. 76, Elmore City, Carter Co.;

Myron Groseclose, Bethany, Okla., CA **$97,207,** est. $110,490, asphalt resurf. 14.9 mi. U. S. 66 at Elk City, Beckham Co.; CA **$400,789,** est. $434,688, c. conc. 3.417 mi. U. S. 62, east of Prague, Lincoln Co.; CA **$93,054,** est. $105,422, asphalt stabil. base, single bit. surf. 4.91 mi. Hy. 15, Orienta, Major Co.; CA **$180,750,** est. $206,219, asphalt stabil. base, single bit. surf. 7.166 mi. Hy. 15, at Orienta, Major Co.;

Jones & Phillips, El Reno, Okla., CA **$78,567,** est. $91,208, grading, drainage 7.92 mi. State Hy. 299 near Yuba, Bryan Co. Grand total $1,116,344. Bids Apr. 6, awarded Apr. 7. CD 3/26.

▲ **O. R. Burden Constr. Corp.**, 6702 E. 21 St., Tulsa, Okla., CA Approx. **$1,316,000.** 60 mi. crude oil pipe line from "Sour Lake, Tex. to near Lake Charles, La.," main pipe line to vicinity of Houston, TEXAS and LOUISIANA. Cities Service Pipe Line Co., M. Esperson Bldg., Houston, Tex. CD 3/13/52.

▲† **Lawless & Alfred,** Box 600, Austin, Tex., LB **$1,139,081,** 100-bed hospital, Harlingen Air Force Base, HARLINGEN, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Apr. 9. CD 4/1.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Tunnicliff Constr. Co.**, 3429 Miller St., Davenport, Ia., CA, **$2,500,000,** STORE, DAVENPORT, IA. Sears, Roebuck & Co., W. Arthington and S. Homan Sts., Chicago, Ill. Bids Mar. 10. CD 3/3.

Chalmers & Borton, Hoke Bldg., Hutchinson, Kan., CA **$700,000.** GRAIN ELEVATOR, GRANT, NEB. The Producers Grain Co., Grant, Neb.

Barbour & Short, Norman, Okla., CA **$568,990,** est. $600,000. municipal HOSPITAL, NORMAN, OKLA. City, Norman, Okla. Awarded Apr. 6. CD 3/30, under LB.

Alvin Homes, Inc., Alvin, Tex., Own Forces. **$317,500,** 38 DWELLINGS, ALVIN, TEX. CD 3/26.

▲ **M. Leslie Hill Enterprises,** 101 Walnut Hill Shopping Village, Dallas, Tex., Own Forces. **$1,685,000.** approx. 200,000 sq. ft. masonry SHOPPING VILLAGE CENTER, DALLAS, TEX. CD 12/22.

Cain, Brogdon & Cain, Majestic Bldg., Fort Worth, Tex., LB **$440,300,** est. $500,000. 1 story E. M. Daggett Junior HIGH SCHOOL, FORT WORTH, TEX. Fort Worth Independent School Dist., 409 E. Weatherford St., Fort Worth, Tex. Bids Apr. 7. CD 3/24.

▲ **Tellepsen Constr. Co.**, 1710 Telephone Rd., Houston, Tex., CA. Approx. **$2,225,000.** Unit 1, 100x350 ft. masonry SHOPPING CENTER, 7½ acre site, in Cloverlief area to serve Home Owned Estates Areas adjacent, HOUSTON, TEX. Suburban Residential Corp., c/o Dan Moody, c/o Abstract & Title Bldg., Houston, Tex. CD 12/8, under Dan Moody & Assoc., is owner.

Hub Lumber Co., 5519 Lawndale St., Houston, Tex., Own Forces. **$310,000.** 21 frame, brick DWELLINGS, concrete slab fdn., HOUSTON, TEX. CD 3/19.

▲ **BMFP Constr. Co.**, 2110 Avenue A, Lubbock, Tex., CA **$1,420,109,** AUDITORIUM-COLISEUM, LUBBOCK, TEX. City, Lubbock, Tex. Bids Apr. 2. CD 4/6, under LB.

Embe Development Co., 5901 Almeda St., Houston, Tex., Own Forces. **$330,125,** 33 frome DWELLINGS, concrete slab fdn., PASADENA, TEX. CD 3/29.

Walsh & Burney Co., 928 N. Flores St., San Antonio, Tex., CA. Approx. **$500,000.** 4 story, bsmnt. CONVENT and CHAPEL, SAN ANTONIO, TEX. Sisters of Charity of The Incarnate Word, Broadway and Hildebrand Sts., San Antonio, Tex. CD 2/5.

(Continued on page 76)

NEW INTERNATIONAL MEDIUM-DUTY FOUR-WHEEL DRIVE TRUCKS

For Off-Highway or Highway Operation

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You can haul men, tools, equipment to any job—through mud, sand, and snow—over terrain where conventional trucks can't go. With front axle disengaged, you can operate normally on the highway.

Tough-job engineered. These new models are built for the toughest kind of work. Like every International, they give the low operating and maintenance cost and long life that have made International the heavy-duty sales leader for 21 straight years.

These new International 4x4 models have the stamina, ruggedness, and versatility for the toughest jobs. See one today. See how it fits your work. Time payments arranged. See your International Dealer or Branch for all the facts.

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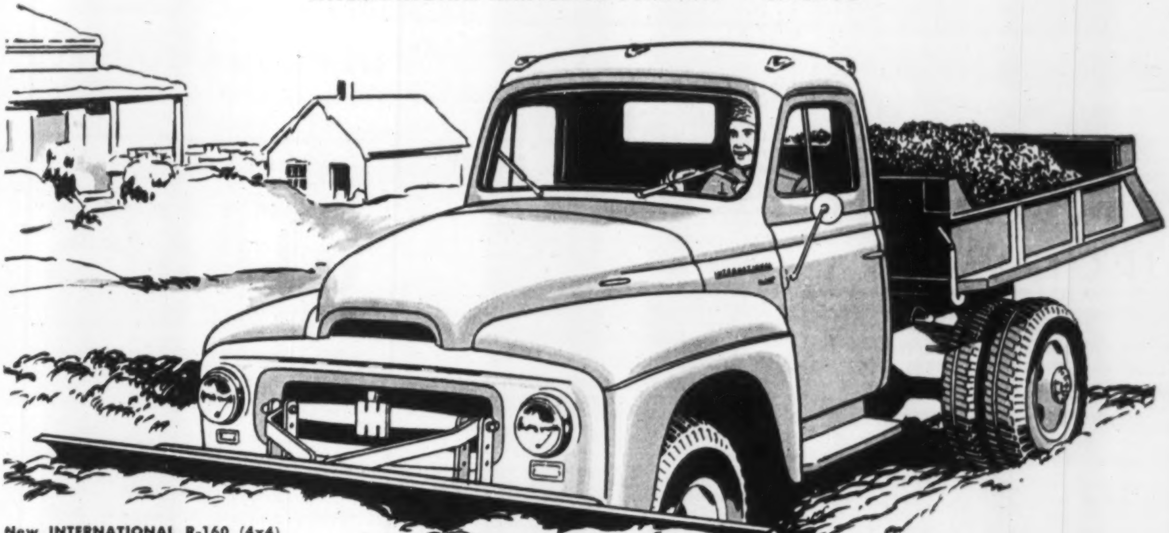

New INTERNATIONAL R-160 (4x4) with 2-yard dump body and reversible trip blade 8½-foot snow plow. GVW rating, 11,000 lbs. Famous Comfo-Vision cab.

Brief Specifications of these new INTERNATIONAL medium-duty 4x4 models

Two chassis models. Model R-140 (4x4)—130-inch wheelbase, 60-inch CA; 142-inch wheelbase, 72-inch CA, GVW rating 11,000 lbs. Model R-160 (4x4)—154-inch wheelbase. 84-inch CA; 172-inch wheelbase, 102-inch CA, GVW rating 15,000 lbs.

All-truck power. Model R-140 (4x4), 100-hp. Silver Diamond 220 valve-in-head engine. Model R-160 (4x4), 108-hp. Silver Diamond 240 valve-in-head engine.

Eight forward speeds, two reverse. Transmission has four forward speeds, one reverse, with 2-speed transfer case.

Easily converted for highway use. Special transfer case permits disengaging front axle for normal 2-wheel drive operation.

Transmission power take-off openings on right and left side to handle front-mounted winch.

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(Continued from page 74)

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

Oregon—TELEPHONE SYSTEM—B.A. 5/1—Clear Creek Mutual Telephone Co., Oregon City, reconstr. 93.52 mi. telephone sys., Clackamas Co. Plans deposit $10. Northwest Telephone Engineers, Regal Bldg., Portland, engr.

† **Arizona-Nevada**—B.A. 5/20 — Bureau Reclamation, Dpt. Interior, Phoenix, Ariz., Oracle Sub-station and alterations to ED-5 Sub-station, Davis Dam Proj., Spec. DC-4143.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **IDAHO**—State Hy. Dpt., Boise.

Peter Kiewit Sons' Co., Le Boeuf-Daugherty, Longview, Wash., LB, **$1,080,869**, Alternate 1, span and superstructure precast in one unit with curbs poured in place;

George Chica Co., E. 2917 Sharp St., Spokane, Wash., LB, **$1,641,021**, Alternate 2, 6 inverted U-sections, bolted and keyed together to make up the deck, curbs would be precast and placed after erection of the span;

Cascade-Austin Co., 2930 4 St. S., Seattle, Wash., LB, **$1,114,549**, Alternate 3, stringers are precast and the floor, end beams, curbs are poured in place for bridge over Pend 'Oreille River at Sandpoint, Bonner Co. Bids Apr. 6. CD 3/15.

OREGON—State Hy. Comn., Highway Bldg., Salem,

Young & Smith, Builders Exchange Bldg., Portland, Ore., CA **$245,900**, three concrete bridges, Columbia River Hy., Sherman and Wasco Counties;

Lee Hoffman, Box 37, Beaverton, Ore., CA **$108,980**, reconstr. 4 timber trestle bridges, Pacific Hy. Linn Co. Bids Apr. 1. R. H. Baldock, c/o owner, engr.

▲ **OREGON**—State Hy. Comn., Highway Bldg., Salem,

Erickson Paving Co., 1550 N. 34 St., Bellevue, Wash. CA **$166,723**. grading 4.18 mi. Little Creek-Estacada Sect., Woodburn-Estacada Hy. FAP S-264 (2), Clackamas Co.;

E. C. Hall Co., 12012 S. W. Barbur St., Portland, Ore., and **J. C. Compton**, Box 86, McMinnville, Ore., CA **$524,147**, paving 9.74 mi. Deady-South Umpqua River unit, Deady-Shady Sect., Pacific Hy., FAP BFI-189 (17) and BFI 78 (21), Douglas Co.;

Acme Constr. Co., Box 306, Eugene, Ore., CA **$186,814**. grading, paving 2.69 mi., two bridges, Jasper Bridge-Pleasant Hill Sect., Springfield, Creswell Hy., FAP S-104 (2), Lane Co.;

N. A. Toole Constr. Co., Ontario, Ore., CA **$88,923**, paving 3.17 mi. Sheep Creek Hill Sect. Little Sheep Creek Hy., Wallowa Co.;

Porter W. Yett, 6500 N. E. Ainsworth St., Portland, Ore., CA **$123,250**, grading, paving 2.88 mi. Beaverton Junction-Progress Sect., Olson county road, FAP S-161 (1), Washington Co. R. H. Baldock, c/o owner, engr. Bids Apr. 2.

▲ **OREGON**—State Hy. Comn., Highway Bldg., Salem,

Fred Rouse & Henry Miller, Salem, Ore., CA **$156,823**, grading, paving, 2.98 mi. Salem-Roberts Sect., Independence-Salem Rd., FAP S-12 (2), Marion Co.;

J. C. Compton Co., Box 86, McMinnville, Ore., CA **$158,130**, paving 10 mi. I-O-N Hy., Malheur Co.;

L. P. Stubblefield, Box 341, Eugene, Ore., CA **$82,983**. grading, paving 1.8 mi. Suislaw Junction-Smithfield Sect., Territorial Hy., FAP S-247 (5), Lane Co.;

F. L. Somers & George R. Stacey, Box 938, Klamath Falls, Ore., CA **$709,346**, grading, 11.44 mi. Goshen-Divide Sect., Pacific Hy., FAP I-FI-161 (22), Lane Co.;

D-H Paving Co., 6808 Hy. 99, Vancouver, Wash., CA **$88,143**, reoiling 37.09 mi., shoulder oiling 16.75 mi. three state hys., Klamath and Lake Counties;

Parker-Schramm, Inc., Builders Exchange Bldg., Portland, Ore., CA **$435,735**. grading 7.36 mi., paving 7.13 mi. Columbia River Hy., FAP F-27 (5), Columbia Co. Grand total $1,531,160. Bids Apr. 1. R. H. Baldock, c/o owner, engr.

▲† **MacDonald & Kruse**, 7540 Wheatland Ave., Sun Valley, Calif., LB. **$3,085,381**, Los Angeles River Improvement Reseda Blvd. to Sepulveda Flood Control Basin, CIVENG-04-353-54-32, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Apr. 8. CD 3/17.

▲ **Macco Corp.**, Paramount, Calif., **D & H Constr. Co. & M. H. Hasler Constr. Co.**, 2131 Fulton Ave., Sacramento, Calif., LB, **$3,534,826**, constr. Santa Felicia Dam on Piru Creek of the Santa Clara River, Calif., Watershed, Ventura Co., CALIFORNIA. United Water Conservation District, 806 Railroad Ave., Santa Paula, Calif. Bechtel Corp., 3780 Wilshire Blvd., Los Angeles, designer. Bids 4/6. CD 3/15.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Arrington Constr. Co., Inc.**, Idaho Falls, Idaho, CA, **$2,031,200**, buildings, area services and facilities for initial engine test area of Aircraft Nuclear Propulsion Proj. AT (10-1)-685, ARCO, IDAHO. Atomic Energy Comn., Operations Office, 550 2 St., Idaho Falls, Idaho. Bids Mar. 31. CD 4/7, under LB.

E. C. Mardis, Walla Walla, Wash. LB **$569,007**. 1 story, 25,680 sq. ft. rein.-con. HOSPITAL, CLARKSTON, WASH. Tri-State Memorial Hospital, Clarkston, Wash. Bids Apr. 6. CD 3/17.

Wick Constr. Co., 720 N. 35 St., Seattle, Wash. LB **$333,840**. general contract 1 story, 85x275 ft., 70x50 ft. rein.-con. Wedgewood Elementary SCHOOL in northeast part of city, SEATTLE, WASH. School Dist. No. 1, 815 Fourth Ave. N., Seattle, Wash. Bids Apr. 6. CD 3/18.

▲ **Howard S. Wright & Co., Inc.**, 407 Yale Ave. N., Seattle, Wash., LB. **$1,346,963**, general contract 3 story, 136x171 ft., rein.-con. addns., with smaller

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2x2—12"	$ 7.85	$ 7.15	1x2—12"	$ 6.15	$ 5.60
—15"	9.85	8.95	—15"	6.60	6.00
—18"	11.50	10.50	—18"	7.50	6.50
—24"	16.00	14.50	—24"	10.00	9.00
—36"	24.00	22.50	—36"	14.00	12.00

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section going up more than 4 stories, plus existing HOSPITAL structure alterations, SEATTLE, WASH. Swedish Hospital, Summit Ave. and Columbia St., Seattle, Wash. Bids Apr. 8. CD 3/2.

▲ **Trepte Constr. Co., Inc.,** Box 1231, San Diego, Calif., LB, **$1,205,000,** 3 story, rein.-con. HOSPITAL, LA MESA, CALIF. Grossmont General Hospital, 9325 El Cajon Blvd., Grossmont, Calif. Bids Apr. 5. CD 3/16.

▲ **Hagstrom Constr. Co.,** 1567 Selby Ave., St. Paul, Minn., CA, **$4,099,000,** low-rent housing, Jordan Downs Reconstruction, Part 2, LOS ANGELES, CALIF. Housing Auth. of City of Los Angeles, 1401 E. First St., Los Angeles, Calif. Bids Feb. 23, awarded Apr. 7. CD 3/1, under LB.

Roblynn, Inc., 184 N. 2 Ave., Upland, Calif., Owner Builds, **$561,000.** 63 stucco DWELLINGS, Heather Way, Robert St., Las Vegas Rd., POMONA, CALIF.

Samuel Developers, 12038 W. Washington Blvd., Culver City, Calif., CA, **$351,701,** 47 frame, stucco DWELLINGS in Tract 4355, POMONA, CALIF. Rand Investment Co., 12038 W. Washington Blvd., Culver City, Calif.

S. V. Hunsaker, 9026 E. Las Tunas Dr., Temple City, Calif., CA, **$384,000.** 60 frame, stucco DWELLINGS, Dade Ave., Aldgate Ave., etc., PUENTE, CALIF. Hunny Investment Co., 9026 E. Las Tunas Dr., Temple City, Calif.

Arnold Constr. Co., 4937 E. Cajon Blvd., San Diego, Calif., CA, **$684,790** 75 frame, stucco DWELLINGS in Fairmont Park, SAN DIEGO, CALIF. Birmingham Development Co., 4937 El Cajon Blvd., San Diego, Calif.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

N. S., Sydney—B.A. 4/28—Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont., dredging, approx. 260,000 cu. yd. $375,000; base area for R.C.N., incl. piling and concrete cape walls, fenders and breakwaters, Approx. $500,000, for R.C.N. Base. Plans deposit $100 each.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Spino Constr. Ltd., 10170 St. Laurence Blvd., Montreal, Que., CA, **$230,275,** sewers in Dorchester St., MONTREAL, QUE. Municipality, City Hall, Montreal, Que. H. A. Gibeau, City Hall, Montreal, Que., city engr. CD 6/8/51.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Canadian Kellogg Co. Ltd.,** 33 Bloor St. E., Toronto, Ont., CA, **$10,000,000,** lubricating oil PLANT, incl. solvent extraction and dewaxing plants, etc. EDMONTON, ALTA. Imperial Oil, Ltd., 445 Christian St. S., Sarnia, Ont. Bids Mar. 15. CD 2/25.

▲ **Chittick's Ready Mixed Concrete,** 6 Chesley Ave., St. John, N. B. CA **$1,955,525.** erection, operation and dismantling of concrete batching PLANT and ready-mix concrete to contractors, Camp Gagetown, FREDERICTON, N. B. Defence Constr. Co., 56 Lyon St., Ottawa, Ont. Bids Mar. 4. CD 2/19.

▲ **Abbey Landry,** 10 Release Centre, Moncton, N. B., CA, **$1,000,000,** 225-bed, 50x116 ft. brick, steel Hotel Dieu HOSPITAL addns., MONCTON, N. B. Hotel Dieu Hospital, Rev. Jeanne Therese, Montreal, Que. Bids Feb. 27. CD 2/23.

▲ **B. Perini & Sons Ltd.,** Canada, 49 Jackes St., Toronto, Ont., CA, **$1,180,956,** Archive STORAGE Bldg. at Tunney's Pasture, OTTAWA, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Feb. 17. CD 2/25, under LB.

Saquenay Contractors Ltd., 144 St. Clement St., Jonquiere, Que., CA, **$440,000,** concrete, steel, brick SCHOOL in Vaudreuie Ward, ARVIDA, QUE. School Comn., 346 Mellon St., Arvida, Que. Lamontagne & Gravel, 365 E. Racine St., Chicoutimi, Que., archts., Delisle & Assocs., 365 Racine St., Chicoutimi, Que., engrs.

▲ **J. M. E. Fortin,** Dorval, Que., Owner Builds, **$1,380,000,** 115 BUNGALOWS, STE. ROSE QUE. J. P. Bayard, 506 Ste. Catherine St. E., Montreal, archt.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† **Alaska, Cordova**—PATCHING, SEALCOATING—**B.A.** 5/3—Civil Aeronautics Admin., Federal Bldg., Anchorage, patching and sealcoating airfield, Inv. 5-54-245.

BIDS ASKED—BUILDINGS

† **Alaska, Kenai**—QUARTERS—B.A. 5/12—U. S. Eng., Anchorage, two 2 story bsmnt., frame 8-family quarters and two houses, Inv. 54-54. Plans deposit $25. CD 11/25/52.

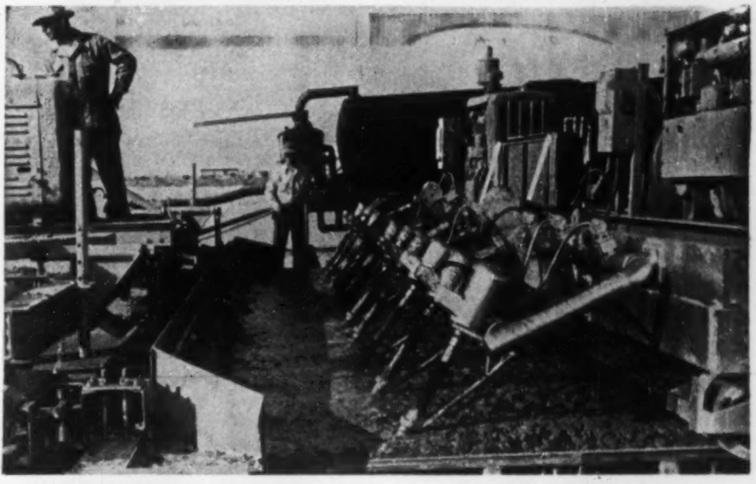
HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **ALASKA**—Alaska Road Comn., Dpt. Interior, 4 and Harris Sts., Juneau,

Babler Bros. & Rogers, 11760 N. E. Glisan St., Portland, Ore., LB **$396,990,** paving 25 mi. roads in Anchorage area, on Sect. A1 of Anchorage-Elmendorf alternate through route Sect. A3 of Glenn Hy., Spenard Rd., 4 Ave. exten. etc. Bids Apr. 6. CD 3/12.

† **Boen, Egge, Cummins & Koon,** 3647 Stone Way, Seattle 3, Wash., LB **$921,176,** est. $999,810, 27 rein.-con. ammo storage igloos, 60x12½ ft. and 40x12½ ft., Inv. 54-62, Ladd Air Force Base, ALASKA. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. **Bids Apr. 6.** CD 3/17.



FULL DEPTH VIBRATION is a vital part of laying high strength 19 inch concrete pavement for a 15,000 foot runway at Edwards Air Force Base, California. Thorough vibration by VIBER electric paving vibrators mounted behind the spreader permits fast and accurate finishing of the harsh mix necessary to develop high strength required.

Paving vibrators speed concrete handling in longest runway

Full depth internal vibration consolidates and speeds easy finishing of low slump, high strength concrete in the 15,000 foot runway now under construction at Edwards Air Force Base, in Southern California. A battery of VIBER paving vibrators mounted behind the spreader provides thorough vibration for the full width and depth of the 19 inch thick runway, believed to be the longest ever built.

• PURPOSE OF THE VIBRATION is to produce a uniform, high strength slab which will support modern heavy bombers and withstand the searing blast of jet engines. Thorough vibration also makes it easy to handle a mix so dry it can be finished without delay. This keeps length of the equipment train to a minimum and permits better supervision of working crews.

• CONTRACT FOR THE JOB was awarded to a joint venture of R. A. Westbrook, Morrison-Knudsen Company, Inc., and Ford J. Twaits Company. It calls for 411,000 cubic yards of concrete in the runway, associated taxiways, and warmup aprons. Full width, full depth vibration on the job is in accordance with specifications similar to those covering current construction or modernization of Air Force installations in Nebraska, Missouri, Louisiana, Arizona, New Jersey, and even overseas.

• VIBER paving vibrators used on all these jobs are based on an original VIBER design used successfully on airports and highways in the United States and abroad, since 1943. They are another example of the progressive design and development that keep VIBER a leader in the vibration field.

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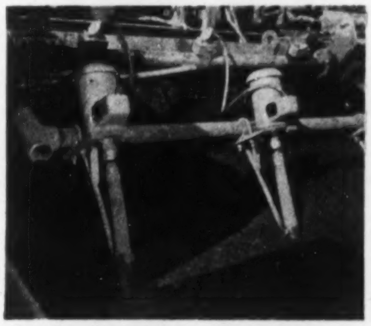

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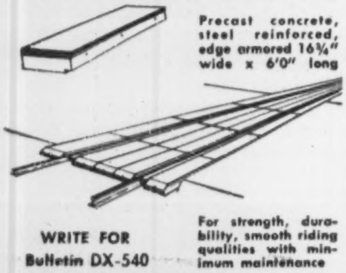

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U. S. POSSESSIONS

BIDS ASKED—HEAVY CONSTRUCTION

† **Puerto Rico, Mayaguez**—MISSILE TEST CENTER—B.A. On Or About 6/4—U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Auxiliary No. 9, Air Force Missile Test Center, Serial No. Eng-08-123-54-58.

AMERICANS ABROAD

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **(Joint Venture) Kaiser Engineers, Inc., Co.,** 1924 Broadway, Oakland 12, Calif., **Walsh Constr. Co.,** 122 E. 42 St., New York 17, N. Y., **B. Perini & Sons, Inc.,** 73 Montwaite Ave., Framingham, Mass., and **Raymond Concrete Pile,** 140 Cedar St., New York, N. Y., CA. Est. **$56,000,000.** Contr. No. 20,002. Eucumbene-Tumut Tunnel and appurtenant works. in Snowy Mountains in southeastern part of State of **New** South Wales, Australia, NEW SOUTH WALES. **Snowy** Mountains Hydro-Electric **Auth.,** Box 32, P.O. Cooma, 4S, N.S.W. Australia. **Bids** Nov. 30. CD 7/13.

Proposed Projects

WATER SUPPLY

Mich., Grand Rapids—Wyoming Twp., Herman DeZwaan, clk., 1155 28 St. S.W., Grand Rapids, 5 m.g. reservoir, 10 acre site, 38 St. and Burlingame Ave., Wyoming. **$900,000.**

▲ **Miss., Jackson**—City, City Hall, water plant. **$3,000,000.**

SEWERS, WASTE DISPOSAL

▲ **Calif., San Francisco**—City and San Francisco Co., City Hall, **$12,645,000** bond election June 8, sewerage system. CD 6/10/48.

Mo., Richmond—City, voted **$540,000** bonds Mar. 30, sewage disposal plant, lines, etc. CD 3/24.

▲ **N. Y., East Greenbush**—Town, sanitary sewerage sys. and treatment plant. **$1,175,000.** CD 10/1/45.

BRIDGES

▲ **Wis., Milwaukee**—City, City Hall, viaduct over Northwestern R. R. tracks at E. Lincoln Ave. **$1,250,000.** Lloyd D. Knapp, city engr. CD 12/3/43.

STREETS AND ROADS

▲ **MICHIGAN**—State Hy. Dpt., Stevens T. Mason Bldg., Pine and Michigan Sts., Lansing,

Eaton and Ionia Counties—relocation US-16 north of Grand Ledge, grading to start between M-100 and town of Eagle, Grand Lake-Portland. **$2,000,000.**

Oakland Co.—4-lane divided hy. from Kent Lake eastward to divided hy. on east side of Farmington to replace present road between 2 points, Farmington. **$6,500,000.** C. H. Cash, hy. engr.

▲ **O., Cleveland**—Cuyahoga Co., Court House,

Alexander Rd., in Walton Hills and Oakwood from Northfield Rd. to Broadway, grade, drain, pave and grade separation at Pennsylvania R. R. to connect with Pettibone Rd. **$750,000.**

Brookpark Extens.—grade, drain, pave from Mastick to Lorain Rd. in Parkview and North Olmsted. **$1,000,000.**

Brookpark Rd.—grade, drain, pave W. 150 St. in Cleveland and Brook Park, relocate W. 150 St. to connect with Smith Rd., and New York Central grade separations at Brookpark and at Smith Rd. **$3,000,000.**

Fitzwater Rd.—relocation and resurf., in Independence and Brecksville, from Riverview to Brecksville Rd. **$75,000.**

Five Points Rd.—grade, drain, pave, Brookpark, exten. from Engle Rd. to Berea Freeway. **$500,000.**

Grant Ave.—resurf., from E. 49 to E. 71 St., Cuyahoga Heights. **$37,000.**

Hilliard Rd.—resurf., from Wooster to Wagar Rd. **$57,000.**

Miles Rd. in Moreland Hills and Bentleyville, road relocation and new Chagrin River Bridge and approaches. **$750,000.**

Pleasant Valley Rd.—resurf., from Ridge to Parma Park Blvd. **$56,700.**

Riverview Rd.—widen at site of old Fitzwater Rd. landslide, Brecksville. **$50,000.**

Schaaf Rd.—grade, drain, pave, relocation from Brookpark to Granger Rd., Brooklyn Heights. **$3,300,000.**

Wallings Rd.—from York to State Rd., North Royalton. **$55,600.**

Warrensville Rd.—grade, drain, pave, Warrensville Heights, from Shaker Heights line to Harvard Rd. **$225,000.**

Wilson Mills Rd.—grade, drain, pave from Green to Trebisk Rd., So. Euclid, and bridge connecting Wilson Mills with Monticello Blvd. **$1,100,000.** CD 11/13/51.

EARTHWORK, WATERWAYS

▲ † **Wash., Tacoma**—City, City Hall, 500 ft. concrete or rock-fill diversion dam, 285 ft. high, on south fork of Skokomish River with 4 mi. tunnel to Cushman reservoir for hydro development, **$14,000,000.** H. Cole, Utilities Center, city light supt.

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AIRPORTS

† **Calif., San Francisco**—HANGAR, etc.—American Airlines Inc., 100 Park Ave., New York, N. Y., hangar and office bldg. **$500,000.** Quinton Engineers Ltd., 812 W. 8 St., Los Angeles, consult. engrs.

† **R. I., Quonset Point**—POWER PLANT—P. Wks. Office, First Naval Dist., 495 Summer St., Boston, Mass., power plant. **$800,000.** Charles Maguire & Assoc., 1015 Turks Head Bldg., Providence, consult. engr. CD 10/31/51.

LATIN AMERICA

Mexico, El Salto—Sria. de Recursos Hidraulicos, P. de Reforma, 69, Mexico City, plans irrigation dam, $810,000.

PUBLIC BUILDINGS

▲ **Calif., Los Angeles**—CIVIC CENTER—City, City Hall, **$19,500,000** bond election June 8, Civic Auditorium Center. CD 6/1.

▲ **Calif., Los Angeles**—HUMANITIES—University of California, 405 Hilgard Ave., plans by Austin, Field & Fry, 2311 W. 3 St., 3 story masonry humanities bldg. **$1,000,000.**

▲ **Calif., Oakland**—SCHOOLS—Oakland City Unified School District, 1025 Second Ave., **$19,838,000** bond election June 8, repairing schools and new schools. CD 3/8.

▲ **Calif., South Pasadena**—SCHOOLS—South Pasadena Unified School District, 1327 Diamond Ave., **$1,645,000** bond issue approved, schools. CD 3/16.

▲ **Conn., Bloomfield**—SCHOOL—Town, H, Ward Pinney, chn. High School Bldg. Comn., Bloomfield, plans by Sherwood Jeter Jr. & Assocs., 36 Pearl St., Hartford, high school, west of Park Ave. **$1,000,000.**

▲ **Conn., Windsor Locks**—HIGH SCHOOL—Town, Henry M. Brockerick, chn. School Bldg. Comn., 50 Church St., plans by Ernest Sibley & Ernest Sibley, Jr., 7 S. Main St., West Hartford, high school. **$1,500,000.** Robert W. Loomis, 32 Maple Ave., Windsor, struct. engr. Paul D. Bemis, 36 Pearl St., Hartford, mech. engr. CD 8/18.

▲ **Ill., Quincy**—SCHOOL—Quincy School District Bd. Educ., Quincy, voted **$2,900,000** bonds, brick, steel, concrete high school. CD 12/23/46.

▲ **Mass., Agawam**—SCHOOL—Town, 100 Main St., plans by Alderman & MacNeish, 594 Riverdale Rd., West Springfield, high school, DeLogia track, **$2,000,000.**

▲ **Mich., Ann Arbor**—ATOMIC ENERGY—University of Michigan, Bd. Regents, W. K. Pierpont, vice pres., Plant Service Bldg., plans by Smith-Hinchman & Grylls, Inc., 800 Marquette Bldg., Detroit, rein.-con., steel atomic energy bldg. to house nuclear research reactor. **$1,000,000.** Babcock & Wilcox Co., 161 E. 42 St., New York, N. Y., design reactor. CD 12/4.

▲ **Mich., Farmington**—SCHOOL—Farmington Twp., School Dist., voted **$1,500,000** bonds, school, Eberle M. Smith Assoc., Inc., 153 E. Elizabeth St., Detroit, archt.

▲ **Mont., Missoula**—SCHOOL—High School Dist., **$2,750,000** bond election May 8, high school. CD 3/31.

▲ **O., Columbus**—GARAGE—City, City Hall, 577-vehicle ramp-type parking garage. **$1,450,000.** DeLeuw Cather Co., 150 N. Wacker Dr., Chicago, Ill., engr. CD 4/9/52.

▲ **O., Wapakoneta**—HIGH SCHOOL—Bd. Educ., Wapakoneta, defeated bonds Apr. 1, high school, gymnasium-auditorium, etc. **$1,140,000.** CD 3/26.

▲ **Pa., Harrisburg**—STATE OFFICE—General State Auth., 18 and Herr Sts., plans by Lacy, Atherton & Davis, Hotel Sterling, Wilkes-Barre, state office bldg., Forster St., near Capitol Park. **$6,500,000.** A. F. Jones, c/o owner, ch. engr. CD 9/11/45.

▲ **R. I., Newport**—HIGH SCHOOL—City School Dpt., Wm. Macleod, chn., Carl H. Portez, supt., Newport, plans by Kelly & Gruzen, archts., 73 Tremont St., Boston, Mass., Chambers & Moriece, landscape archts., 33 Church St., Cambridge, Mass., C. W. Riva Co., structural archt., 511 Westminster St., Providence, high school off Ruggles Ave. **$2,200,000.** Hayden, Harding & Buchanan, 810 Park Square Bldg., Boston, Mass., mech. engrs. CD 6/18.

▲ **Tex., Houston**—AUDITORIUM, etc.—City, City Hall, 900 Brazos St., municipal auditorium, **$3,000,000**; civic center expansion, **$3,500,000**; archives bldg., **$300,000**; city hall, **$3,000,000.** Frank Baldwin, c/o owner, dir. P. Wks.

▲ **Wash., Cheney**—HEATING PLANT, etc.—Eastern Washington College of Education, Cheney, steam heating plant, **$1,000,000**; music bldg., **$350,000**; industrial arts bldg., **$850,000**; science bldg. **$1,000,000.**

▲ **Alta., Edmonton**—ADMINISTRATION—Province of Alberta, Dpt. Hys., Edmonton, administration bldg. **$1,000,000.**

▲ **Alta., Oliver**—DINING ROOM—Province of Alberta, Dpt. P. Welfare, Edmonton, dining room addn., admission ward and other buildings. **$1,065,400.** CD 12/3/43.

▲ **Ont., Toronto**—PARKING GARAGE—City, City Hall, parking garage, Queen St. E. between Victoria and Church Sts. Approx. **$1,000,000.** Margison, Babcock & Assocs. Ltd., 30 Eglinton Ave. E., engrs. CD 12/28.

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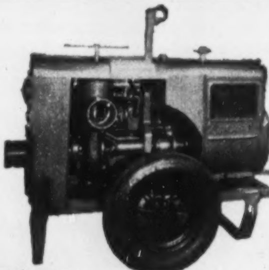

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COMMERCIAL BUILDINGS

▲ **Calif., Garden Grove**—DWELLINGS—The Hale Corp., 12948 Huntington Beach Blvd., plans by Davis & Quigley, 43 Malaga Cove Plaza, Palos Verdes Estates, 213 frame, stucco dwellings, **$2,000,000.**

▲ **Calif. Niles**—HOSPITAL—Owner, c/o Sorensen & Ellsworth, archts., P.O. Box 95, 63-bed hospital between Niles and Centerville. **$1,200,000.**

▲ **Calif., Palo Alto**—CENTER—Ford Foundation, 2612 Buhl Bldg., Detroit, Mich., plans by Wurster, Bernard & Emmons, 402 Jackson St., San Francisco, cent for advanced study in behavioral sciences, **$3,500,000**

▲ **Calif., San Pedro**—DWELLINGS—The McCarthy Co., c/o E. H. Fickett, archt., 5657 Wilshire Blvd., Los Angeles, 170 frame, stucco dwellings in Rolling Hills Area. **$1,500,000.**

▲ **Md., Rockville**—SHOPPING CENTER—Kingdom Gould, Jr., C. A. Froman, D. F. Antonelli, Jr., F. W. Brokaw, Wyatt Bldg., Wash., D. C., plans by John Stan, Rockville, and Philip Mason, 8511, Colesville Rd., Silver Spring, shopping center between U. S. Rt. 240 and North Washington St. **$1,250,000.**

▲ **Mass., Waltham**—SCIENCE—Brandeis University, 415 South St., plans by Samuel T. Dubitsky, 41 N. Main St., Fall River, science bldg. **$1,000,000.** CD 12/24.

▲ **Minn., St. Paul**—STORE—W. T. Grant Co., c/o Thorshov & Cerny, archts., 400 Metropolitan Bldg., Minneapolis, 2 story, bsmnt., 100x234 ft., store Seventh and Cedar Sts. **$1,500,000.**

▲ **Neb., Omaha**—CHURCH—First Methodist Church, 20 and Davenport Sts., church. **$1,000,000.** CD 1/19.

▲ **N. Y., Mt. Vernon**—HOSPITAL WING—Mt. Vernon Hospital, N. 7th Ave., plans by Ferrenz & Taylor, 152 W. 42 St., New York Zone 36, hospital wing. **$1,500,000.**

▲ **Pa., Elkins Park**—APARTMENT—Albert Toll, Washington Lane and Ashbourne Rd., plans by Aaron Colish, 117 S. 17 St., Phila., apartment, parking area and garage. **$2,500,000.**

▲ **Pa., Wayne**—OFFICE—American Telephone & Telegraph Co., 400 Hamilton Ave., White Plains, N. Y., plans by Lorimer & Rose, 254 W. 54 St., New York, N. Y., Long Line Central Office Bldg., lines, etc. **$2,750,000.**

▲ **Tex., Fort Worth**—COUNTRY CLUB—Colonial Country Club, c/o West End Parkhill Dr., Fort Worth, plans by Preston M. Geren, 1607 Fort Worth Natl. Bank Bldg. and John Floore, 1401 W. Lancaster St., 45,000 sq. ft. brick, steel country club. **$1,000,000.** CD 4/2/53.

▲ **Wis., Oneida**—SEMINARY—Sacred Heart Seminary, Oneida, seminary. **$1,000,000.**

▲ **Que., Maniwaki**—DWELLING UNITS—Syndicate, c/o Ernest Nault, 7 Montcerf St., Maniwaki, 200 concrete, brick dwelling units, **$1,800,000.**

INDUSTRIAL BUILDINGS

▲ **Mich., Battle Creek**—FOOD PROCESSING—Kellogg Co., Battle Creek, masonry breakfast food processing bldg., power plant rehabilitation imprvs. **$3,000,000.**

▲ **N. C., Greensboro**—PLANT—P. Lorillard Co., 119 W. 40 St., New York, N. Y., cigarette plant. **$10,000,000,** plus **$3,000,000** for equipment. Lockwood Greene Engineers, Inc., 10 Rockefeller Plaza, New York, N. Y., consult. engr. CD 1/6/53.

▲ **O., Circleville**—GENERATING PLANT UNIT, etc.—Columbus & Southern Ohio Electric Co., 215 S. Front St., Columbus, install Unit No. 5 at Picway generating plant, near here, high pressure boiler and turbo-jet generator, 80,000 k.w. capacity, **$4,430,000;** coal handling equip. **$133,100;** high speed cicuit-breakers, Picway, Canal, Milo and Bexley sub-stations, **$399,000;** sub-station at Circleville, **$356,000;** constr. 138/13.2 kv sub-station at duPont plant, near here, **$114,500.**

▲ **O., Napoleon**—PLANT—Campbell Soup Co., 100 Market St., Camden, N. J., mfg. plant, near here, **$9,000,000.** Lockwood Greene Engineers, 10 Rockefeller Plaza, New York 20, N. Y. engrs. CD 7/13.

▲ **O., Nelsonville**—GENERATING PLANT UNIT—Columbus & Southern Ohio Electric Co., 215 S. Front St., Columbus, install Unit No. 4 at Poston generating plant, near here, **$4,082,300.**

▲ **Pa., Phila.**—WHOLESALE FOOD CENTER—Greater Phila. Movement, c/o Harry Batten, N. W. Ayer Bldg., wholesale food center, **$15,000,000-$30,000,000.**

▲ **Tex., Lufkin**—PLANT—Southland Paper Mills, c/o E. Kurth, mgr., Lufkin, newsprint pump plant production expansion 77,000-annual ton capacity will be added. **$3,500,000.**

▲ **Tex., Timpson**—PLANT—United Chemical Co., c/o Grover Hart, Jr., Fidelity Bldg., Dallas, natural gasoline plant, **$2,750,000.**

UNCLASSIFIED

▲ **Mich., Battle Creek**—RAILROAD FACILITIES—Grand Trunk Western R.R. Co., A. N. Laird, ch. engr., 441 E. Jefferson St., Detroit, imprvs., major constr. incl. track arrangement, new facilities. Nichols R.R. Yards, **$3,000,000.**

▲ **Tex., Houston**—GOLF COURSES—City, City Hall, 900 Brazos St., large golf courses, No. 1, area of Houston Country Club, **$1,625,000;** No. 2, **$525,000;** No. 3 **$585,000;** No. 4, **$690,000,** exact locations on foregoing undecided. Frank Baldwin, Dir. P. Wks. Engr. CD 11/22/44.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
April 27, 29, May 4 Massachusetts

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

NEW HAMPSHIRE—State Dpt. P. Wks. & Hys., Concord, **R. G. Watkins & Son, Inc.,** Mill Yard, Amesbury, Mass., CA **$807,707,** highway-bridges, Nashua-Merrimack. Bids Apr. 1, awarded Apr. 7. CD 4/8, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

W. Spinelli & Sons Co., Inc., 25 Moulton St., Cambridge, Mass. LB **$616,000.** U-101 Contr. 2 completion ENGINEERING BLDG., AMHERST, MASS. State, University of Mass., office of treas., Kenneth W. Johnson, Amherst, Mass. Bids Apr. 9. CD 3/24.

Turner Constr. Co., 420 Lexington Ave., New York 17, N. Y. CA Est. **$750,000.** 4 story, 58x140 ft. DORMITORY, 53x100 ft. CHAPEL, NORTHAMPTON, MASS. Smith College, Northampton, Mass. William & Geoffrey Platt, 101 Park Ave., New York 17, N. Y., archts. Severud-Elstad-Krueger, 415 Lexington Ave., New York 17, N. Y., struct. engrs. Slocum & Fuller, 207 E. 32 St., New York 16, N. Y., mech. engrs. CD 2/13/46.

Bonvicini Building Co., Inc., 1500 S. Main St., Torrington, Conn., CA, **$980,190,** Junior-Senior High SCHOOL, LITCHFIELD, CONN. Town, School Bldg. Comn., Bd. Educ., Litchfield, Conn. Bids Mar. 16. CD 3/23, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 28 Delaware
STREETS AND ROADS
April 28 Delaware April 30 Pennsylvania
April 4 New Jersey May 6 New York

▲ **Pa., Palmyra**—B.A. 5/7—Palmyra Boro Auth., Boro Hall, sanitary sewerage sys. appurtenances (two contracts); outfall line, appurtenances; sewage treatment plant and main pumping station; 4 pumping stations, pumping work and allied contracts. $2,000,000. Plans deposit $50 and $25. Glace & Glace, 1001 N. Front St., Harrisburg, Pa., engrs. CD 10/5.

BIDS ASKED—BUILDINGS

Pa., Monessen—HOUSING—B.A. 5/6—Westmoreland Co. Housing Auth., Court House, Greensburg, Fed. Housing Proj. 18-2, 14 two story brick, row type 100-families housing, $800,000. Plans deposit $50. Sorber & Hoone, First Natl. Bank, Greensburg, archts. CD 2/6.

N. Y., Brooklyn—HOUSING—B.A. 5/4—New York City Housing Auth., 63 Park Row, New York Zone 38, foundations and general constr.; heating and ventilating electrical work, plumbing, furnishing, installation elevators for Howard Houses, Proj. No. NYS-58-3, in area bounded by E. New York Ave., Stone Ave., Glenmore Ave. and Thatford Ave., and northerly portion of area bounded generally by Glenmore Ave., Watkins St., Pitkin Ave., and Thatford Ave., and northeasterly portion of that area bounded generally by Glenmore Ave., Thatford Ave., Pitkin Ave. Rockaway Ave. and easterly portion of area bounded generally by East New York Ave., Thatford Ave., Glenmore Ave. and Rockaway Ave., Brooklyn Boro. Plans deposit $75, $25 for elevators. CD 8/11/52.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Alan Homes,** c/o Lane Realty, 107-40 Queens Blvd., Forest Hills, N. Y. Owner Builds. **$1,200,000.** 110 HOUSES, tract at Great Neck and Carman Rds., FARMINGDALE, N. Y.

Seminole Homes, c/o John Burton, archt., 163-18 Jamaica Ave., Jamaica, N. Y. Owner Builds. **$800,000.** 22 HOUSES, tract at Grand Central Parkway and 69 Rd., FOREST HILLS, N. Y.

▲ **Joseph P. Blitz, Inc.,** 1 E. 57 St., New York, N. Y. CA. Approx. **$2,750,000.** HIGH SCHOOL, 27-acre site Merillon Ave. and Rockaway Ave., GARDEN CITY, N. Y. Bd. Educ., 110 Seventh St., Garden City, N. Y. Eggers & Higgins, 100 E. 42 St., New York 17, N. Y., archts. CD 9/25/52.

▲ **Turner Constr.,** 420 Lexington Ave., New York 17, N. Y. and **G. D. Campbell Bldg. Co., Inc.,** 39 Cannon St., Poughkeepsie, N. Y., CA. 320,000 sq. ft. PLANT, incl. power house, utilities, parking, KINGSTON, N. Y. International Business Machines, 590 Madison Ave., New York 22, N. Y. Giffels & Vallet, Inc., 1000 Marquette Bldg., Detroit, Mich. engr. CD 11/12.

▲ **G & S Contractors, Inc.,** c/o Teas & Steinbrenner, archts., Homeland Bldg., Malverne, N. Y. Owner Builds. **$1,600,000.** 138 HOUSES, 40-acre tract, Roosevelt and Violet Aves., MASSAPEQUA PARK, N. Y.

▲ **Maran Constr. Co.,** 1910 Arthur Ave., Bronx 57, N. Y. LB **$1,011,000,** general constr. for new addns. to and modernization existing P. S. 74 SCHOOL, E. 189 St. between Crotona and Prospect Aves., Bronx Boro, NEW YORK, N. Y. Director Bureau Constr., 49 Flatbush Ave. exten., Brooklyn, 1, N. Y. Bids Apr. 9. CD 3/17.

Clovermere Homes, c/o Samuel Paul, archt., 89-51, 164 St., Jamaica 3, N. Y. Owner Builds. **$900,000.** 60 HOUSES on tract on Bismarck Ave., NORTH BELLMORE, N. Y.

Bellmore Gardens Homes, c/o Klein & Parker Realty Co., Inc., 1391 Northern Blvd., Roslyn, N. Y. Owner Builds. **$600,000.** 40 HOUSES, Maple Ave., east of Bellmore Rd., WANTAGH, N. Y.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
April 27 North Carolina April 28, May 12 Louisiana
STREETS AND ROADS
April 27 North Carolina April 28, May 12 Louisiana

▲ **Va., Alexandria**—Bids in July 1954—City, Court House, Alexandria, sewage disposal project. **$10,000,000.** Greeley & Hansen, 220 S. State St., Chicago 4, Ill., consult. engrs. Prospective bidders who are not registered are requested to communicate with Mr. E. L. Kusterer, secy.-treas., State Registration Bd. for Contractors, Commonwealth of Virginia, 17 N. 16 St., Richmond 19, Va. for specific directions and forms for making application for registration. CD 1/12/53.

BIDS ASKED—BUILDINGS

▲ **Ga., Reidsville**—SCHOOLS—B.A. 4/27—Tattnall Co. Bd. Educ., Reidsville, 6 school projects $1,000,000. Plans deposit $50.

Fla., Sanford—HOSPITAL—B.A. 5/20—Seminole Co. Comn., Court House, Sanford, hospital. $900,000. Plans deposit $50. CD 3/6/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

Dixie Constr. Co. & Robert E. Lee Co., Inc., Box 201, Savannah, Ga., LB **$699,996,** Prop A; LB **$869,354,** Prop. B; LB **$399,875,** Prop. C; LB **$408,623,** Prop. D, municipal natural gas sys., ORANGEBURG, S. C. City, Orangeburg, S. C. Barnard & Burk, 1023 Nicholson Dr., Baton Rouge, La., engrs. Bids Apr. 6. CD 3/23.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Daniel Const. Co.,** P.O. Box 2286, Greenville, S. C. LB **$2,960,000.** FOOD INDUSTRY BLDG., PLANT and ANIMAL SCIENCE BLDG., GREENHOUSES and AUDITORIUM ANNEX, CLEMSON, S. C. Clemson College, Clemson, S. C. Bids Mar. 23. CD 3/17.

▲ **Wesley Constr. Co.,** 174 Alexander St. N.W., Atlanta, Ga., CA, **$1,500,000,** SERVICE TRAINING PLANT, ATLANTA, GA. General Motors Corp., General Motors Bldg., Detroit, Mich. Bids Jan. 14. CD 1/14.

Hardin & Traver, 266 North Ave. N.E., Atlanta, Ga., LB, **$939,998,** WAREHOUSE, ATLANTA, GA. Alterman Bros., 533 Whitehall St. S.W., Atlanta, Ga. Bids Apr. 8. CD 3/31.

A. B. Newton Co., Vidalia, Ga., CA, **$635,000,** SCHOOLS, CARTERSVILLE, GA. Bartow Co. Bd. Educ., Cartersville, Ga. Bids Mar. 25. CD 3/16.

▲ **James L. Bracewell & Co.,** Toccoa, Ga., LB, **$1,068,443,** SCHOOLS, CLARKSVILLE, GA. Habersham Co. Bd. Educ., Clarksville, Ga. Bids Apr. 1. CD 3/16.

L. F. Freeman, Macon, Ga., CA, **$618,700** SCHOOLS, SOPERTON, GA. Treutlen Co. Bd. Educ., Soperton, Ga. Bids Mar. 23. CD 4/1, under LB.

Rood Constr. Co., 4217 Ponce De Leon Blvd., Coral Gables, Fla., Force Account, **$916,000** 120 RESIDENCES, CORAL GABLES, FLA.

▲ **Bruce Constr. Corp.,** 1118 N.E. 2 Ave., Miami, Fla., CA, **$1,644,000,** 250 HOUSING UNITS, MIAMI, FLA. Miami Housing Auth., P.O. Box 67, Edison Center Station, Miami, Fla. Bids Mar. 31, awarded Apr. 7. CD 3/16.

▲ **Lummus Co.,** 385 Madison Ave., New York 17, N. Y. CA Est. **$6,000,000.** design and construct mfg. PLANT to make high pressure acetylene derivatives, CALVERT CITY, KY. General Aniline & Film Corp., 230 Park Ave., New York 17, N. Y.

▲ **Ray M. Lee Co.,** 1004 Edgewood Ave., Atlanta, Ga., LB **$1,160,000.** Baroness Erlanger HOSPITAL addn., CHATTANOOGA, TENN. City, City Hall, Chattanooga, Tenn. Bids Mar. 31. CD 2/16.

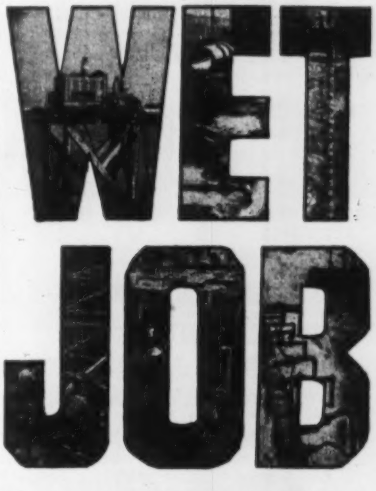
MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 4 Wisconsin
STREETS AND ROADS
April 27 Ohio May 4 Wisconsin

BIDS ASKED—BUILDINGS

▲ **Mich., Utica**—SCHOOL—B.A. 4/28—Bd. Educ., Utica Community School Dist., Jack Harve, secy.,

IF IT'S A



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45461 Brownell St., brick, steel high school, $1,000,000. Plans deposit $25 refundable, Madison & Smith, 2908 N. Woodward St., Royal Oak, archts. CD 1/28.

▲ **Mich., Saginaw**—HOUSING—Bids Asked—Saginaw Housing Comn., Robert J. Bliss, dir., Ave. A and Harold St., Proj. Mich. 6-1 236 family housing units management and maintenance bldg. $3,000,000. Extended date, Leinweber, Yamasaki & Hellmuth, 112 Madison St., Detroit, archts. CD 3/16.

HEAVY CONSTRUCTION

LOW BIDS AND CONTENTS

▲ **Charles H. Shook, Inc.**, 582 W. 2nd St., Dayton 1, O. CA **$1,322,285**, est. $1,230,000 6 m. gl. Southworks Water Treatment Plant, East River Rd., HAMILTON, O. City, City Hall, Hamilton, O. CD 3/18, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Arcose Co.**, 4997 Glenway Ave., Cincinnati, O. Own Forces. **$3,500,000.** 200 one-family brick units DWELLINGS, west side Linneman Rd., south on Sidney and east on Anderson Ferry Rd., CINCINNATI, O. Joseph Allen, 4638 Glenway Ave., Cincinnati, O., engr. Awarded Apr. 10.

O. O. Thompson, 2910 Montana Ave., Cincinnati, O. Owner Builds. **$875,000**, 50 one-family brick, partial bsmt. HOMES, Galbraith Rd., near Daly Rd., CINCINNATI, O. Ayers & Graf, 527 Linton St., Cincinnati, O., engrs. Awarded Apr. 8.

▲ **L. I. Combs & Sons**, 2645 Wabash St., Gary, Ind., Own Forces, **$1,400,000**, 150 HOMES, south of GARY, IND. CD 1/30/53.

J. Emil Anderson Co., 1089 Balmoral St., Chicago 40, Ill., CA, **$600,000**, 1 story, 85,000 sq. ft. WAREHOUSE, 1540 N. Cicero Ave., CHICAGO, ILL. Sears, Roebuck & Co., Homan and Arthington Sts., Chicago, Ill. Arthur M. Heda, 1809 Balmoral St., Chicago 40, Ill., archt. Awarded Mar. 17.

▲ **Shadeland Realty Co.**, 3300 N. Shadeland St., Indianapolis, Ind., Owner Builds, **$650,000**, 48 HOMES in Creekwood Addn.; **$750,000**, HOMES in new addition, INDIANAPOLIS, IND.

▲ **Aldredge Constr. Co.**, Kokomo, Ind., Owner Builds, **$350,000**, rental HOMES south of here on Indian State Hy. 31; **$700,000** 40 HOMES in Country Club Addn., KOKOMO, IND.

Piar Development Co., Arlington Heights, Ill., Own Forces, **$900,000**, 45 HOMES, ARLINGTON HEIGHTS, ILL.

▲ **Mercury Builders**, 5412 W. North Ave., Chicago, Ill., CA **$2,881,620**, 1, 2 and 3 story Reavis High SCHOOL, BEDFORD PARK, ILL. School District No. 220, 77 and Moody Sts., Summit, Ill. Bids Feb. 10, awarded Apr. 6. CD 1/13.

Abell Howe Co., 53 W. Jackson Blvd., Chicago 4, Ill., CA, **$700,000**, 56,000 sq. ft. press and stamping SHOP, CHICAGO, ILL. Hotpoint Div., General Electric, 5600 W. Taylor St., Chicago, Ill. Awarded Mar. 26.

▲ **Leonard Gervaso & Co.**, 536 W. Madison St., Chicago, Ill. Own Forces, **$1,100,000**, 60 homes in Western suburbs, CHICAGO, ILL.

Petrik-Reinke Constr. Co., 33 Shady Lane, Elmhurst, Ill., Own Forces, **$700,000**, 45 HOMES, ELMHURST and VILLA PARK, ILL.

Mercury Builders, 5412 W. North Ave., Chicago, Ill., CA, **$854,429**, HIGH SCHOOL, EVERGREEN PARK, ILL. School District 231, 95 and Sawyer Ave., Evergreen Park, Ill. Bids Mar. 30, awarded Apr. 5. CD 3/22.

Helmut Baumann Constr. Co., 314 Westmore St., Lombard, Ill., Own Forces, **$800,000**, 40 HOMES, ELMHURST-GLEN ELLYN, ILL.

Alther Constr. Co., 18216 Harwood St., Homewood, Ill., Own Forces **$700,000**, 35 HOMES, HOMEWOOD, ILL.

▲ **Albert Home Builders**, 16568 James Couzens Dr., Detroit, Mich. CA Est. **$1,750,000.** 61 brick HOMES, Oak Park Manor, OAK PARK, MICH. Albert Winnick, 4099 Fuller St., Detroit, Mich.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

BRIDGES
April 30 Minnesota

STREETS AND ROADS
April 30 Minnesota

† **Tex., Fort Hood**—B.A. 5/12—U. S. Eng., 100 W. Vickery St., Fort Worth, water treatment plant, Inv. No. ENG-41-443-54-57. $750,000-$1,500,000. CD 9/15/52, under Public Buildings.

† **Tex., Fort Hood**—B.A. 5/12—U. S. Eng., 100 W. Vickery St., Fort Worth, sewage disposal facilities, incl. rehabilitation existing sewage treatment plant and works, constr. new secondary facilities, Inv. No. ENG-41-443-54-58. $750,000-$1,250,000. CD 9/15/52, under Public Buildings.

† **Ark., Jacksonville**—WAREHOUSING—B.A. 5/13—U. S. Eng., Gay Bldg., Little Rock, 100,000 sq. ft. warehouse. $500,000-$1,000,000. CD 12/17/52.

BIDS ASKED—BUILDINGS

▲† **Tex., Marshall**—BUILDINGS—B.A. 5/4—U. S. Eng., Box 61, Tulsa 2, Okla., constr. of Group 2 bldgs., 41 masonry type buildings, appurtenances, utilities, etc. Longhorn Ordnance Works, Plant 3, Inv. No. ENG-34-066-54-71. $500,000-$1,250,000. CD 8/25/52.

▲ **Ark., Little Rock**—HOSPITAL—B.A. 5/18—Arkansas Baptist Hospital, 1700 W. 13 St., hospital addn. $1,500,000. Erhart, Eichenbaum & Rauch, Wallace Bldg., archts. CD 5/6.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,

S. J. Groves & Sons Co., 510 Wesley Temple Bldg., Minneapolis, Minn. LB **$875,388.** grav. base plant-mixed bit. surf., c. conc. 11.3 mi. between east limit of St. Paul and west end of St. Croix River bridge at Hudson, Wis., Ramsey Co.

Okes Constr. Co., 1501 First National Bank Bldg., St. Paul, Minn. LB **$680,670.** grading, paving 9.4 mi. between Ortonville and West State Line, Big Stone Co. Bids Apr. 9. CD 3/25.

▲ **IOWA**—State Hy. Comm., Ames,

Fred Carlson Co., Decorah, Ia., LB, **$489,329**, paving 8.327 mi. F-553 (9), Benton and Tama Counties; LB, **$139,174**, paving 2.53 mi. F-211 (5), Marshall Co.; LB, **$822,211**, paving 12.341 mi. F-988 (6), Marshall and Tama Counties; LB, **$302,318**, paving 6.181 mi. F-357 (10) Winneshiek Co.;

Hallet Constr. Co., Crosby, Minn., LB, **$135,504**, paving 0.708 mi. U-178 (3), Page Co.; LB, **$103,517**, pavement wid'n. 5.258 mi. FN-61, Gerro Gordo Co.; LB, **$69,113** pavement wid'n. 2.092 mi. P-555, Worth Co.;

Central Eng. Co., 2531 Rockingham Rd., Davenport, Ia., LB, **$340,357**, paving 1.427 mi. U-831 (3), Scott Co.; LB, **$561,804**, pavement wid'n., resurf. 9.293 mi. F-56 (4), Henry Co.;

Iowa Road Building Co., Fairmont, Minn., LB, **$247,172** pavement wid'n., resurf. 10.133 mi. P-611, Carroll Co.; LB, **$260,427**, pavement wid'n. resurf. 9 mi. P-1055, Woodbury Co.;

Jensen & Krage, 2220 Hawkeye Rd., Sioux City, Ia. LB, **$90,537**, paving 0.362 mi. FN-14, Harrison Co.;

Booth & Olson, Inc., 529 Insurance Exchange Bldg., Sioux City, Ia., LB, **$155,329**, paving 0.801 mi. U-27 (6), Appanoose Co.;

Central Constr. Co., Indianola, Ia., LB, **$141,495**, grading 9.293 mi. F-56 (4), Henry Co.;

Concrete Materials & Constr. Co., 405 Guaranty Bldg., Cedar Rapids, Ia., LB, **$179,057**, stab. base and bit. surf. 8.999 mi. Special F-872 (3), Clinton Co.;

Hargrave Constr. Co., 2424 Bever St., S. E., Cedar Rapids, Ia., LB, **$324,024**, stab. base and bit. 10.612 mi. Special F-337 (3), Guthrie Co.;

Ronald Kenyon Constr. Co., West Des Moines, Ia., LB, **$159,401**, stab. base and bit. 4.923 mi. Special FN-840, Jasper Co.;

Norris Constr. Co., Ottumwa, Ia., LB, **$174,273**, stab. base and bit. 8.024 mi. S-1864 (3), Louisa Co.;

Western Eng. Co., Harlan, Ia., LB, **$230,817**, sta. base and bit. 10.4 mi. Special P-1056, Plymouth Co.;

Kaser Constr. Co., West Des Moines, Ia., LB, **$64,659**, stab. base and bit. 3.818 mi. S-601 (4), Story Co. Bids Apr. 6. CD 3/24.

Gardner Constr. Co., Glenwood Springs, Colo., LB, **$925,313**, large hatchery bldg., utility bldgs. with vehicle storage and workshop, combination fish food storage, nurse ponds, concrete raceways, 3 dwellings, area roads and concrete diversion dam with pipe lines, RIFLE, COLO. Colorado Game & Fish Dpt., 1530 Sherman St., Denver, Colo. Bids Apr. 5. CD 3/29.

BUILDINGS

LOW BIDS AND CONTRACTS

Harmon Constr. Co., 100 S. Indiana St., Oklahoma City, Okla., CA, **$722,354**, general constr. ANIMAL SCIENCE BLDG. and FIELD HOUSE, FAYETTEVILLE, ARK. University of Arkansas, Fayetteville, Ark. Bids Apr. 7.

Cowen Constr. Co., Shawnee, Okla., LB **$986,900.** City AUDITORIUM and CIVIC CENTER, MIAMI, OKLA. City, Miami, Okla. CD 6/10.

Oak Park Development Co., Sand Springs, Okla. Purchase and Hire. Approx. **$750,000.** 75 HOUSES, on Oak Park addn., SAND SPRINGS, OKLA., E. I. Cohen, 1944 E. 36 St., Tulsa, Okla. archt. Awarded Apr. 6.

J. M. Odom, Box 774, Austin, Tex., LB **$767,935.** general constr. CLASSROOMS, OFFICE STRUCTURE for English Department, AUSTIN, TEX. University of Texas, Main Admin. Bldg., Austin, Tex. Bids Apr. 7. CD 3/10.

H. L. Lockhart, 203 Carson St., Houston, Tex. CA Approx. **$750,000.** 110,000 sq. ft., steel, brick SHOPPING CENTER, off N. Shepherd and W. 11 St., HOUSTON, TEX. Brace & Carruth, 706 Garden Oaks St., Houston, Tex. P. Herbert Caldwell, 4122 Glenbrook Ct., Houston, Tex., archt. Awarded Apr. 8.

▲ **C. H. Leavell & Co.**, 1900 Wyoming St., El Paso, Tex., CA, **$1,895,994**, four story central core with 2 story side wings, 135,000 sq. ft. new State Highway Department OFFICE bldg., DENVER, COLO. Colorado State Hy. Dpt., 518 State Office Bldg., Denver, Colo. Bids Mar. 24, awarded Apr. 5. CD 4/6, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

STATE HIGHWAY LETTINGS

STREETS AND ROADS
May 11 Idaho

BIDS ASKED—BUILDINGS

▲ **Calif., Alhambra**—SCHOOL—B.A. 5/4—Alhambra City High School Dist., 601 N. Garfield Ave., 1 and 2 story, rein.-con. wood frame school at Crown City Ranch, San Gabriel, $2,750,000. Marsh, Smith & Powell, 208 W. 8 St., Los Angeles, archts. CD 1/27.

▲ **Idaho, Mountain Home**—HOUSING—Bids Asked—Purchasing & Contracting Office, Mountain Home Air Force Base, Idaho, construct, maintain and operate 500 unit housing under Title VIII, National Housing Act. $5,000,000. Plans deposit $50. CD 12/29.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **Morrison-Knudsen Co., Inc.**, 319 Broadway, Boise, Idaho, LB, **$1,446,736.** 660 ft. earthfill, Timothy Meadows Dam, Clackamas Co., OREGON. Portland General Electric Co., 621 S. W. Alder St., Portland, Ore., Bids Apr. 8. CD 3/26.

▲† **Guy F. Atkinson Co.**, Box 259, Long Beach, Calif., CA, **$1,562,650**, Los Angeles River Channel imprvt., 20 St. to 7 St., Long Beach, Los Angeles Co., CIVENG-04-353-54-30, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 30, awarded Apr. 5. CD 4/5, under LB.

▲ **Jerry Artukovich & N. A. Artukovich Constr. Co.**, 723 Union Ave., Montebello, Calif., CA, **$1,341,759** sanitary sewers Phase II and III, in North Redondo Area, REDONDO BEACH, CALIF. City, 122 Emerald St., Redondo Beach, Calif. Bids Mar. 29, awarded Apr. 5. CD 4/5, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Haas & Haynie**, 275 Pine St., San Francisco, Calif., LB, **$3,000,000**, Holiday INN, with 200-car parking space, RENO, NEV. Norman Biltz & John Mueller, c/o contractor. Frank W. Green, 1515 E. Chevy Chase Dr., Glendale, Calif., archt.

Ivan Wells & Sons, 509 S. Beverly Dr., Beverly Hills, Calif., CA, **$857,000.** 111 frame, stucco DWELLINGS, in Tract 1803, ANAHEIM, CALIF. Fairview Development Co., 509 S. Beverly Dr., Beverly Hills, Calif.

▲ **Len Constr. Co., Inc.**, 8320 W. 3 St., Los Angeles, Calif., CA, **$1,087,700**, Imperial Courts low-rent HOUSING, LOS ANGELES, CALIF. Housing Auth. of City of Los Angeles, 1401 E. First St., Los Angeles, Calif. Bids Feb. 16, awarded Apr. 7. CD 2/23, under LB.

Wes Meyers Constr. Co., Box 3557, Phoenix, Ariz., CA, **$689,320**, Needles High SCHOOL addn. NEEDLES, CALIF. Needles High School District, Needles, Calif. Bids Mar. 31, awarded Apr. 5. CD 4/7, under LB.

▲ **Barrett Constr. Co.**, 918 Harrison St., San Francisco, Calif., CA, **$1,300,000**, men's DORMITORY, SAN FRANCISCO, CALIF. University of San Francisco, 2130 Fulton St., San Francisco, Calif. Awarded Apr. 3. CD 4/6, under LB.

E. H. Moore & Son, 693 Mission St., San Francisco, Calif., CA, **$679,183**, Sonoma County HOSPITAL addns., alterations, SANTA ROSA, CALIF. Sonoma Co., Court House, Santa Rosa, Calif. Bids Mar. 23, awarded Apr. 7. CD 4/6, under LB.

CANADA

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Huron Constr. Co.**, King St., Chatham, Ont., Owner Builds. **$1,250,000.** 100 brick ranch style HOMES, SARNIA, ONT.

▲ **Foundation Co. of Canada Ltd.**, 1220 Bay St., Toronto, Ont., LB, **$4,140,000.** HOSPITAL exten., remodeling, 76 Grenville St., TORONTO, ONT. Women's College Hospital, 76 Granville St., Toronto, Ont. Bids Mar. 18. CD 3/11.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **Reed & Martin**, Fairbanks, Alaska, LB, **$775,115**, est. $799,792, Third St. utilidor, Inv. 54-76, Eielson Air Force Base, ALASKA. U. S. Eng., Anchorage, Alaska, Bids Apr. 7. CD 3/22.

▲ **Lytle & Green and S. Birch & Sons**, Securities Bldg., Seattle 1, Wash., LB, **$1,042,060**, est. $1,079,088;

S. S. Mullen, 621 9th St. N., Seattle, Wash., offered a bidder-design alt. which could reduce its figure to **$1,039,565**, for 22 rein.-con. igloos, 1.5 mi. access road and 1 mi. spur track, Inv. 54-92, Eielson Air Force Base, ALASKA. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Apr. 9. CD 3/17.

BUILDINGS

LOW BIDS AND CONTRACTS

Reed & Martin, Fairbanks, Alaska, LB, **$696,000.** 3 story 65x67 ft. steel STEAM POWER PLANT addn., part of $1,500,000 program, FAIRBANKS, ALASKA. City, City Hall, Fairbanks, Alaska, Bids Apr. 5. CD 3/17.

LATIN AMERICA

BIDS ASKED—BUILDINGS

▲ **Cuba, Nicaro**—PLANT—Bids Asked—National Lead Co., 111 Broadway, New York, N. Y., plant addns. for project operated by Nickel Processing Corp., c/o General Services Administration and Formento de Minerales, Havana. $43,000,000.

(Proposal Advertisements see pp. 89 to 93)

UNIT PRICES

Big spread in bids for flood protection contract, N. D.

A bid 16% under the government estimate and 24% below the second bidder's won a $348,753 contract for Schultz & Lindsay Construction Co., Fargo, N. D. Eight contractors vied to build approximately 1.2 miles of flood protection levees. Work is under supervision of the U. S. Corps of Engineers, St. Paul District, Colonel A. H. Bagnulo, District Engineer.

Available plant to be used includes: two 100-HP motor graders; two 130-HP dozers; one ¾-yd dragline; one ¾-yd backhoe; 15 6-yd dump trucks; one 45-HP Traxcavator; one 85-HP dozer; one 16S concrete mixer; one 23-ton Binabatch; and two 40″x48″ sheepsfoot rollers.

Highest percentage difference between the two low bidders occurred in lump sum items. Second bidder set the cost of clearing and grubbing the levee foundation at $4,000; Schultz & Lindsay estimated $23,000, or 475% more. The winning contractor bid $38,000 for the pumping station. This amount is the low bid, yet it is 32% over the engineer's estimate and 38% under the second bidder's price.

A fairly wide spread characterized unit prices too. Schultz & Lindsay bid 68% less than second bidder and 41% below the engineer's estimate on levee embankment, 16% lower than second bidder on borrow excavation.

In addition to four adjacent and partly joined levees, each about 400 feet wide, this project at a bend of Red River of the North, Grand Forks, N. D., includes a pumping station, interior drainage facilities, and miscellaneous appurtenant work. March 10 was the starting date; work must be finished within 570 calendar days.

Prevailing minimum wages are: structural iron workers $2.70 an hour, bulldozer operators $2.09, pipe layers $1.50, bricklayers $3.00, carpenters $2.20, cement finishers $1.75, mason tenders and mortar mixers $1.50, dragline operator $2.30, unskilled labor $1.40.

Bidders include:

1C	Schultz & Lindsay Const. Co., Fargo, N. D.	$348,753
2	St. Paul Dredging Co., St. Paul, Minn.	459,389
8	Barnard-Curtiss Co., Mpls., Minn.	731,189
EE	St. Paul Dist. Corps of Engineers, U.S. Army, St. Paul, Minn.	417,526

Bids: 2-25-54 Item	Unit	Quantity	Unit Prices 1 C	2
Clear & grub levee fndn	ls	1	$23,000	$4,000
Clear in flood plain & misc areas	ls	1	3,000	6,500
Rem misc structures	ls	1	9,000	18,500
Rem old pump station	ls	1	1,500	550
Strip levee fndn	cy	10,800	0.08	0.26
Borrow excavation	cy	203,300	0.56	0.67
Levee embankment	cy	189,300	0.08	0.26
Water for emb compaction	Mgal	330	1.00	4.00
Filter blanket, riprap	cy	90	4.00	4.00
Riprap	cy	180	7.00	15.00
Topsoiling	cy	11,200	0.55	0.30
Seeding	ac	13.8	50.00	85.00
Mulching	ac	13.8	100.00	55.00
Stl sheet piling	sf	320	3.50	3.50
Common excavation	cy	1,700	1.00	2.00
Pumping station	ls	1	38,000	61,000
Gate well "A"	ls	1	7,275	15,664
Gate well "B"	ls	1	5,224	10,500
Manhole no. 1	ls	1	437	242
Catch basin no. 2	ls	1	2,106	937
Manhole no. 3	ls	1	466	300
Catch basin no. 4	ls	1	454	295
Catch basin no. 5	ls	1	895	715
Catch basin no. 6	ls	1	940	687
Catch basin no. 7	ls	1	454	280
Catch basin no. 8	ls	1	405	332
Catch basin no. 9	ls	1	534	370
Manhole no. 10	ls	1	575	393
Catch basin no. 11	ls	1	498	350
Catch basin no. 12	ls	1	776	537
Catch basin no. 13	ls	1	417	222
Catch basin no. 14	ls	1	910	530
Manhole no. 19	ls	1	454	274
Sluice gate with floor stand, f&p compl				
60″	ea	1	1,800	3,647
36″	ea	1	1,100	1,722
48″ x 48″	ea	1	1,400	2,443
42″ x 42″	ea	2	1,200	2,022
Elec work & equip	ls	1	15,340	19,000
Storm water pump, f&p compl	ea	2	7,250	12,000
Sanitary sew pump, f&p compl	ls	1	3,450	5,300
Chain hsts & trolleys, f&p compl	ea	2	100	500
Discharge piping, storm water pumps, f&p compl	ls	1	7,000	9,540
Suction piping to san sew pump & disch piping fr sew pump to head wall & to exist force main, incl conn thereto, & other misc piping, valves & fittings for san sew, f&p compl	ls	1	2,800	3,400
Conc head wall, disch piping outlets	ls	1	600	600
60″ asb bonded, bit coated, galv CM pipe, no. 8 ga, paved invert sew (incl trans sect) at depths:				
8′-10′	lf	10	50.00	40.00
10′-12′	lf	30	50.00	41.40
12′-14′	lf	55	50.00	43.00
14′-16′	lf	60	50.00	45.70
16 -18′	lf	10	50.00	50.00
Cut-off diaphragm for 60″ pipe	ea	4	690	700
72″ x 44″ met end sect, galv, bit coated, (for trans sect at 60″ pipe)	ea	1	428	372
36″ bit coat, galv CM pipe sew at depths:				
Less than 8′	lf	10	18.60	16.50
8′-10′	lf	10	18.60	17.80
10′-12′	lf	105	18.60	19.30
12′-14′	lf	10	18.60	21.40
14′-16′	lf	10	18.60	24.20
Cut-off diaph, 36″ pipe	ea	4	442	255
36″ met end sects, galv & bit coated	ea	1	236	152
48″ asb bonded, bit galv CM pipe, paved inv sew or 48″ RC culv pipe sew at depths:				
10″-12″	lf	50	25.00	22.35
12″-14″	lf	70	25.00	25.00
14″-16″	lf	40	25.00	27.70
36″ asb bit galv corr paved inv sew or 30″ RC culv pipe sew laid at depths:				
10′-12′	lf	290	18.00	19.30
12′-14′	lf	163	18.00	21.40
30″ asb bit galv CM pipe, paved inv sew, or 24″ RC culv pipe sew at:				
12′-14′	lf	17	20.50	20.00
18″ asb bit galv CM pipe, paved inv sew, or 15″ RC culv pipe sew at:				
12′-14′	lf	325	12.00	9.20
14′-16′	lf	45	12.00	11.25
24″ asb bit galv CM pipe, paved inv sew, or 24″ RC culv pipe sew at:				
10′-12′	lf	36	13.00	11.00
18″ bit galv CM pipe, or 15″ RC culv pipe sew at:				
8′-10′	lf	340	10.40	7.00
10′-12′	lf	335	10.40	8.15
12′-14′	lf	320	10.40	9.20
14′-16′	lf	400	11.00	11.40
16′-18′	lf	780	11.00	16.50
18′-20′	lf	120	11.00	18.50

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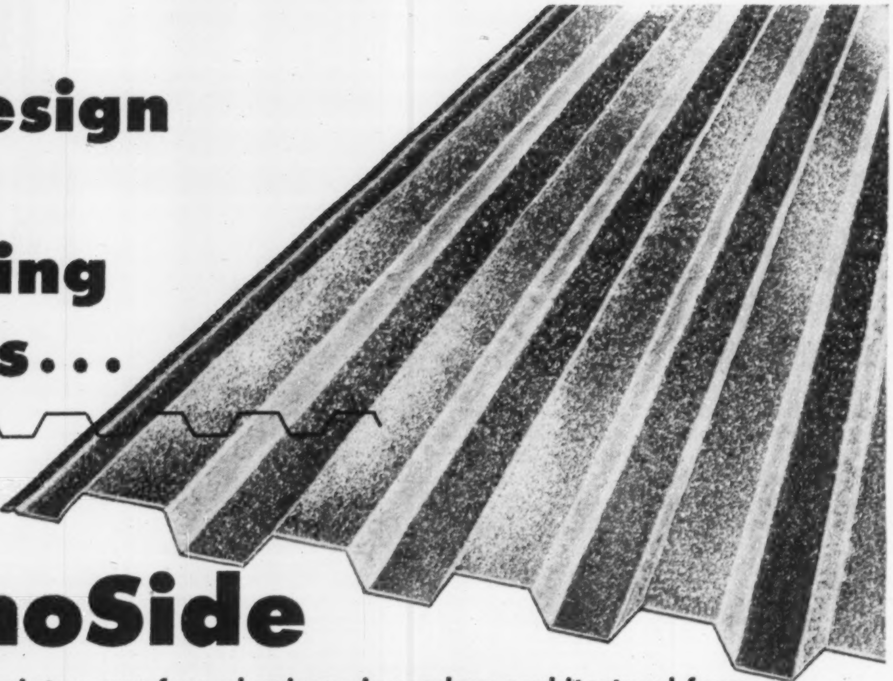

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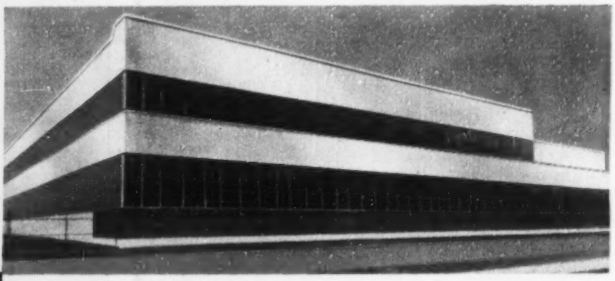

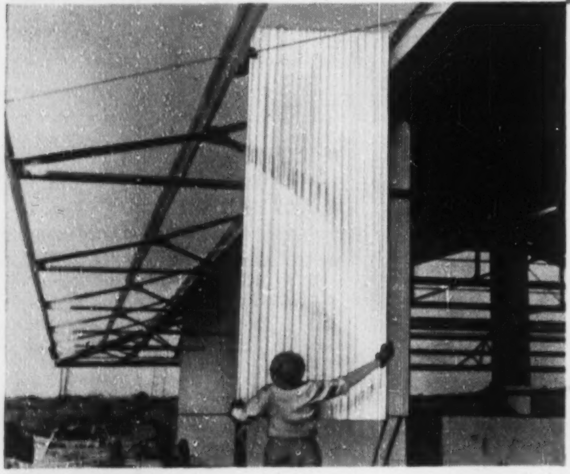

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REYNOLDS ALUMINUM
BUILDING PRODUCTS

BUSINESS AND FINANCE

How much is there to the FHA 'scandal'?

Though it seems that sharpers have been at work, little actual crime has as yet been uncovered

The government's "scandal" involving FHA-insured loans (ENR Apr. 15, p. 19) seems sure to be in the news for weeks to come. Two congressional committees began holding hearings within a few days after President Eisenhower fired Federal Housing Administration Chief Guy Hollyday. And Housing & Home Finance Administrator Albert Cole is conducting his own probe with the help of the Federal Bureau of Investigation.

The charges are that public officials have been lax and permitted excesses or perhaps illegal profits under two FHA-insured loan programs: home improvement loans under Title I, and rental housing loans made under Sec. 608 during the year 1942-1950. This week, Cole indicated that one case of bribery of a government official had developed, and that other parts of the housing program were being checked.

But vast confusion seems sure to prevail in this whole complicated situation. There's a large question of just how much real crime is involved—and whether the whole furor isn't largely a case of sharp but clearly legal practices by smart private enterprisers.

• **The questions**—Certainly the three simultaneous investigations will raise more questions than they will settle, at least for a while. Here as some:

Why did Cole break the "scandals" at this time, when the basic situation in both home improvement and apartment loans had been known for months and years?

Some sources claim that the Administration wanted to beat Sen. Harry F. Byrd to the punch. Byrd, the only Democratic chairman of a congressional committee—the Joint Committee on Nonessential Government Expenditures, has been looking into the Sec. 608 situation for months.

Why did Cole fire Hollyday?

Hollyday, former president of the Mortgage Bankers Assn., is an Eisenhower appointee—and Cole only a couple of months ago had praised him for digging into complaints from homeowners on improvement jobs. Mortgage bankers claim Cole is maneuvering to make FHA and the other semi-independent agencies into divisions that would be directly under Cole's authority. At things are now, the heads of several housing agencies, including FHA, are Presidential appointees—hence aren't completely the subordinates of the HHFA boss.

Wide World photo

NEW FHA HEAD—Norman P. Mason, Massachusetts lumber dealer, who has just been made FHA Commissioner, confers with HHFA Administrator Albert Cole.

• **The charge**—Basically, the furor grows out of these two charges made public by Housing Chief Cole:

(1) **That crews of promoters high-pressured homeowners into home improvement jobs under FHA Title I.**

They would charge a high price, say $2,000, for what was really a $1,000 job. The promoters would contract with local builders to do the work, sometimes splitting with them the difference between the actual cost of the work and the price charged the homeowner. Congressmen and the Department of Justice, as well as HHFA and FHA, have received complaints on overpriced jobs and shoddy work. But where does the illegality arise in charging a customer what he is willing to pay?

Apparently the only charge that could stick would be collusion among any of the parties to the fraud—the promoter, homeowner, lender, or contractor.

(2) **That builders took advantage of provision of the FHA rental housing program during 1942-1950 to get loans from the government exceeding the actual cost of building apartments.**

For instance, a builder might get an FHA-insured loan for 90% of the estimated cost of an apartment building. But he builds at a cost of $800,000, (including his profit) and pockets the $100,000. FHA sets the rents high enough to pay off the estimated cost of the property—including interest and amortization on the loan—over the period of the loan. This of course assumes a normal rate of occupancy.

Granted that this is sharp practice, is there anything illegal in it? Congress voted Sec. 608 originally, and extended its life, with its eyes open. It wanted to provide special incentives for private building of rental apartments without tying up government funds. FHA's estimate of construction cost includes fees for architectural design, builder's profit, and other normal costs. A smart builder could beat such an estimate by a sizable margin. Often, he could save the 10% investment he is supposed to make himself in the property—plus more in addition. The most flagrant case cited by Cole was for a loan of more than $8 million on a rental project that cost less than $4 million. He cited 251 projects on which excess profits to builders amounted to $75 million.

(*B&F continued on page 86*)

Profit margins: Getting thinner

	Sales (in thousands)		Profits (in thousands)		Profit Margin	
	1953	1952	1953	1952	1953	1952
Air Conditioning & Heating						
Amer. Radiator	$298,268	$277,154	$18,714	$18,181	6.3%	6.5%
Minn.-Honeywell	214,019	165,710	10,330	9,081	4.8	5.5
Carrier Corp.	164,438	107,701	6,107	4,523	3.7	4.2
Cement						
Gen. Portland	30,487	29,435	5,226	4,894	17.1	16.6
Lehigh Portland	58,546	53,617	6,308	5,828	10.8	10.9
Construction						
Blaw-Knox	120,068	100,478	4,138	4,189	3.4	4.2
Dravo	97,784	65,293	4,366	3,106	4.5	4.8
Fluor	105,683	80,692	2,060	1,741	1.9	2.2
F. H. McGraw	192,211	213,000	186	29	0.1	0.01
Merritt-Chapman	104,671	80,930	3,495	1,496	3.3	1.8
Morrison-Knudsen	127,642	153,164	5,761	5,438	4.5	3.6
Turner	119,404	105,061	331	468	0.3	0.4
Warren	40,104	38,784	964	846	2.4	2.2
Machinery						
Allis-Chalmers	514,474	513,641	21,944	24,458	4.3	4.8
Bucyrus-Erie	78,582	78,554	5,017	5,089	6.4	6.5
Caterpillar	433,803	477,577	20,255	22,118	4.7	4.6
Wallboard & Roofing						
Johns-Manville	252,642	244,708	19,661	22,620	7.8	9.2
Nat'l Gypsum	116,871	99,130	7,821	7,249	6.7	7.3
U. S. Gypsum	194,590	184,900	19,559	19,031	10.1	10.3

1953 operations show higher sales but lower profits per sales dollar

By this time, most companies in the construction and building supply industries have issued annual reports on their 1953 operations. The table (above) gives a sampling of leading firms.

In general, this table shows that profit margins are getting thinner. Although nearly every company sold a greater dollar volume of goods or services in 1953 than in the preceding year, most companies were unable to make as much profit for their sales dollar.

That's the story told by the two righthand columns in the table.

It is interesting to note, however, that four of the eight contracting firms listed were able to increase their 1953 profit margins over 1952. However, in the case of two of these companies the 1952 profit margin had been unusually low.

• **More competition**—In their annual reports, several contractors indicated that greater competition was responsible for the lower profit margin. One well-known company (not shown in the table) which reported lower profits in 1953 than the year before, attributed this to "intensified competition and a larger-than-normal percentage of loss jobs during the closing months of the year."

Although not all companies indicated whether or not they had paid excess profits tax on 1953 income, it's obvious that the end of this tax on Dec. 31, 1953, will improve the 1954 earnings of some firms. Blaw-Knox Co., for instance, reported that it paid excess profits tax of $1.12 per share, or almost $1.6 million. That compares with a net profit total of about $4.1 million.

Not all of the companies reporting showed their backlogs at the end of 1953 compared with backlogs a year earlier.

Some, however, reported lower backlogs for 1954.

Equipment credit

To push sales, Caterpillar sets up credit subsidiary

Caterpillar Tractor Co. has just formed a credit subsidiary to help dealers finance purchases from the company, and also to help dealers finance time sales to equipment users. In the opinion of some industry observers, this is one more sign of increasing competition in the construction equipment field, where traditionally dealers are expected to handle their own financing.

However, Caterpillar isn't the only equipment firm to provide financing facilities for its dealers through a credit subsidiary. For about five years, International Harvester has been offering financing of construction equipment to dealers and users.

Although there are no tax advantages in setting up a separate credit subsidiary, it makes for a "clean" operation from a financial standpoint. The parent company's borrowings for capital spending, working capital, and so on are kept separate from its credit operations. Lenders are thus better able to appraise loans if they can lend separately to the parent company and to the credit subsidiary.

• **Last resort**—Both Caterpillar and International Harvester emphasize that their credit companies are not intended to compete with local lenders. Both of them encourage dealers to use local financing as much as possible, and to fall back on the manufacturer only as a last resort.

General Motors Corp. does not provide any dealer financing for the construction equipment line it acquired when it picked up Euclid Road Machinery Co. However, one of its credit subsidiaries, Yellow Manufacturing Acceptance Corp., now is considering financing of Euclid products. Yellow Mfg. has been handling financing on GM trucks and buses.

Along with its new credit subsidiary, Caterpillar has just started a merchandising program for used equipment. Caterpillar dealers will offer selected Cat-built equipment as "bonded buys." Such equipment is fully guaranteed against defective parts for 30 days after purchase, backed by a surety bond. Parts proving defective under normal use will be replaced without charge. This will include attachments of any make on the machine at time of purchase. The obligation is limited to the price of the machine up to a limit of $10,000.

THE LONGER LOOK:

Manufacturers have boosted 1954 spending plans for plant and equipment. They expect now to equal 1953 spending

As of now, businessmen plan to spend more money for expansion and modernization in 1954 than last fall they thought they would. Manufacturers now expect to spend as much —$12.3 billion—for new plants and equipment as they actually spent in 1953, according to the seventh annual survey of business plans just completed by the McGraw-Hill Department of Economics.

This is in contrast with the preliminary survey last fall, which indicated a drop of 8% in capital spending by manufacturers. Almost every major segment of manufacturing has boosted its plans, in spite of a general belief that sales this year will be lower than in 1953. The most striking revisions since last fall are those made by machinery, automobile, and oil companies.

U. S. industry as a whole—manufacturers plus utilities, transportation, communications, and mining firms—has preliminary plans to spend on new plants and equipment an average of $17.5 billion a year from 1953 through 1957. This is only $2 billion less than the average of the years 1950 through 1953.

And past experience with plans made more than a year ahead gives good reason to expect that these preliminary plans will be revised upward substantially: Many businesses do not plan capital spending far in advance. Those that do frequently underestimate their expenditures for periods longer than a year in advance.

• Tougher competition—Industry is banking on a rising sales trend, and individual companies show every intention of going out for more than their normal share of the increase. But their plans show that they expect increasingly severe competition. On the average, manufacturers answering the survey expect sales of their own companies to decline in 1954 about 2% below 1953. But for the whole period from 1953 through 1957 manufacturers as a whole expect sales of their particular industry to increase 4%, while they look for sales of their own companies to climb 12%.

• Bigger spending—In order to get this larger share of the market, companies are making plans to expand capacity, even though there is unused capacity now and although the current sales trend is down (see table). Petroleum, food, machinery, electrical machinery and auto companies plan to spend more than in 1953. Auto makers plan the biggest increase—29%. The chemical, steel, textile, and transport equipment industries plan to spend less for new plants and equipment than in 1953.

Most of the manufacturing groups that increased capital spending in 1953 are planning to raise their expenditure again this year. The most notable exception is the chemical industry. Replies to the survey also show that in general it is the large companies that are planning to spend more this year. Generally, smaller companies plan to cut their expenditures.

What about 1955 and the years beyond? The survey also shows preliminary spending plans for 1955, 1956, and 1957 (table). While these plans may be changed, nevertheless they are a significant guide to industry's intentions.

• More modernizing—Business now is placing greater emphasis than it has in recent years on modernizing or replacing older plants rather than expanding. Thus they are concentrating on cutting costs—an essential for many firms that want to prosper in the competitive period they see ahead.

Last year, manufacturing companies used 48% of capital expenditures for expansion, 52% for replacement and modernization. This year, they expect the share for modernization to rise to 57%. Under present plans, this share is expected to reach 61% of capital spending in the 1955-1957 period.

• How firm?—How firm are these plans? Among manufacturing companies, there is a lot of leeway if business conditions change. As a whole, manufacturers estimate that they could spend 15% more—about $2 billion—this year if conditions were ideal. They could also cut back from $12.3 billions to a little more than $6 billion, if sales drop badly. So there is more leeway in 1954 for spending to go down than to go up.

But that's not true for 1955 through 1957. The average amount of spending now planned for 1955-1957 is just about half way between industry's maximum and minimum estimates, with a little more room for increases than decreases.

How business plans capital expenditures

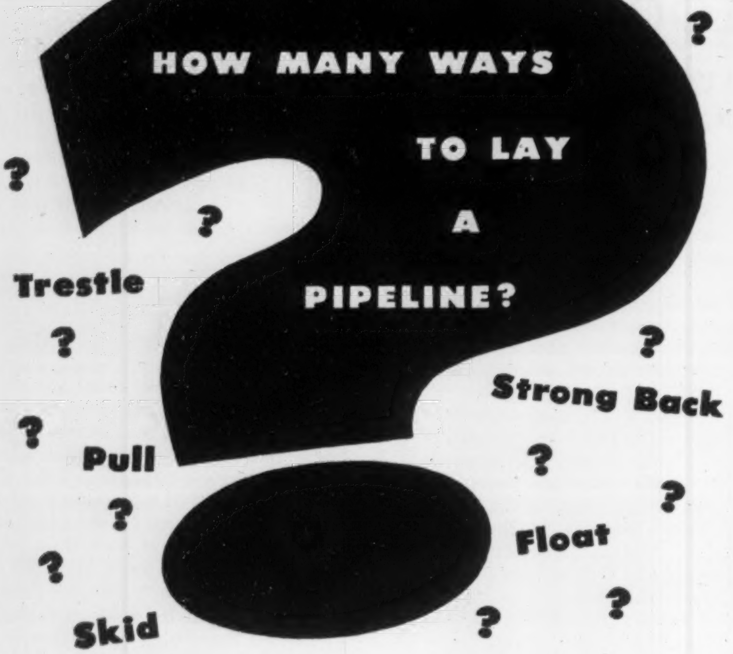
(Millions of Dollars)

	Actual*	Planned	Preliminary Plans		
	1953	1954	1955	1956	1957
Steel	$ 1,340	$ 1,139	$ 831	$ 866	$ 820
Machinery	803	869	748	682	686
Electrical machinery	481	553	359	348	310
Automobiles	1,000**	1,290	1,045	851	710
Transport equipment (including aircraft)	168**	143	80	24	20
Food	818	865	690	641	607
Chemicals	1,559	1,379	1,216	1,342	1,476
Petroleum	2,762	2,983	2,804	2,744	2,625
Textiles	351	317	341	329	334
Other manufacturing	2,994	2,764	2,311	2,268	2,368
All manufacturing	**12,276**	**12,302**	**10,425**	**10,095**	**9,956**
Mining	1,011	1,102	1,003	672	661
Railroads	1,312	1,010	949	990	970
Electric & gas utilities***	4,548	4,366	3,755	3,536	3,536
Other transportation and communications	3,158	2,719	2,072	1,921	1,904
All industry	**22,305**	**21,499**	**18,204**	**17,214**	**17,027**

* United States Department of Commerce

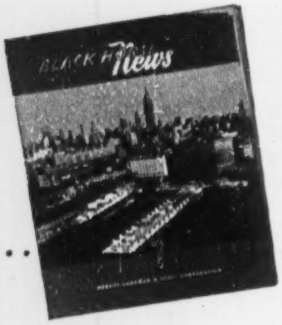
** McGraw-Hill Department of Economics

*** Electrical World, American Gas Association



Actually there are more ways than you can shake a stick at . . . depending on the site conditions, and the versatility, ingenuity and experience of the construction company assigned.

In five recent jobs, Merritt-Chapman & Scott engineers came up with dramatic and extremely logical on-the-spot solutions for crossings beneath the Straits of Mackinac at Mackinaw City, Mich., the Hudson River, at Tompkins Cove, N. Y., the Providence River, at Providence, R. I., the Charles River, at Boston, Mass., and the Schuylkill River, at Philadelphia, Pa.



Space doesn't permit the telling of these interesting stories, but full accounts of most of them are contained in recent issues of our quarterly house organ, The Black Horse News. For reprints of the pipe line stories write Dept. N. We will also place your name on the mailing list to receive future issues of the Black Horse News.

MERRITT-CHAPMAN & SCOTT
CORPORATION
Founded in 1860
General Offices
260 MADISON AVENUE, NEW YORK 16, N. Y.
CLEVELAND • CHICAGO • WASHINGTON, D. C.
BIRMINGHAM • HOUSTON

Construction figures show mild 1st quarter decline

Reports by government agencies and trade associations on construction activity indicate a mild slowdown during the opening months of this year, as compared with the same 1953 period.

It is at variance with the estimates by the Departments of Commerce and Labor that construction put in place during the first quarter was the highest in history.

Here is a rundown on the key figures:

The Bureau of Labor Statistics reports that employment in contract construction was down 1.6% during the first quarter.

Three out of four indicators on materials shipments were down for the first two months of this year. Shipments of portland cement reported by the Bureau of Mines were down 5%. Lumber shipments, as reported by the National Lumber Manufacturers Assn., were down 10%. The American Iron & Steel Institute estimates that shipments of reinforcing bars were down 24%. However, shipments of fabricated structural steel were up 0.4%, according to the American Institute of Steel Construction.

On sales of equipment, only the figures for Caterpillar Tractor Co. are available. They show a 19% drop for the first two months.

Dun & Bradstreet reports that more contractors failed during the first quarter than during any quarter in the postwar period. Failures are up 36% from last year.

More liberal depreciation would help construction

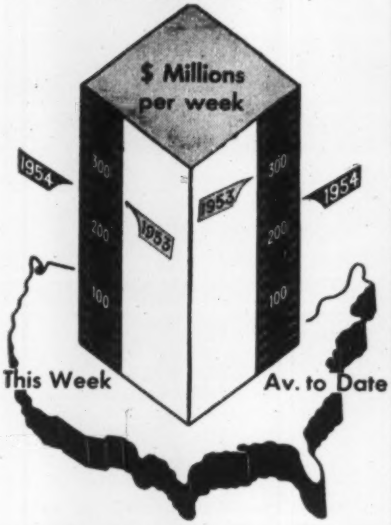
It looks as though the easier depreciation rules proposed in the Omnibus Tax Revision Bill now before the Senate would have a stimulating effect on new construction, if the bill goes through.

The McGraw-Hill annual survey of business plans for capital spending (page 87) asked manufacturers what they would do if depreciation allowances were "substantially increased." About 55% answered that they would spend more for new plants and equipment.

This answer was most common in the machinery, transportation equipment, and electrical machinery fields. These are also among the industries that expect the greatest competitive pressure in the next four years, which may explain partially their particular desire for more efficient plants and equipment.

Activity This Week

As reported to ENR
(in millions of dollars)



Amount of contracts let

	This Week	Cumulative 16 wks 1954	Cumulative 16 wks 1953	Cumulative 16 wks % chge
Federal	$19.4	$288.4	$493.1	—42
State and municipal ..	75.9	1,311.5	1,429.9	—8
Total pub...	95.3	1,599.9	1,923.0	—17
Total priv...	152.7	2,065.0	2,932.7	—30
U. S. total..	**$248.0**	**$3,664.9**	**$4,855.7**	**—25**

Contracts by type of work

	This Week	1954	1953	% chge
Waterworks .	$6.1	$62.2	$77.7	—20
Sewerage ...	7.2	102.0	105.2	—3
Bridges	3.0	122.3	195.4	—37
Highways ..	27.3	443.4	415.6	+7
Earthwork, waterways .	6.8	84.7	115.5	—27
Buildings:				
Public, excl. hsg.	27.9	504.6	517.8	—3
Housg., pub.	5.3	59.0	221.5	—73
Housg., priv.	94.3	1,151.2	1,259.0	—9
Commercial	23.0	358.1	290.7	+23
Industrial .	32.2	485.4	1,154.4	—58
Unclassified.	14.9	292.0	502.9	—42
Total	**$248.0**	**$3,664.9**	**$4,858.7**	**—25**

NOTE: Minimum size projects included are: Waterworks and waterway projects, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

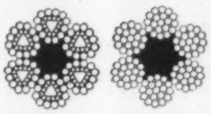
(millions of dollars)	Week of Apr. 15 1954	Cumulative 15 Wks 1954	Cumulative 15 Wks % chge 1953-54
Corporate securities	$67.0	$863.0	—33
State and muncipal:			
Excluding housing	358.2	1,394.3	+38
Housing	...	42.6	—76
Federal loans	11.9	40.2	—9
Federal aid	...	...	...
Total non-federal..	**$437.1**	**$2,340.2**	**—7**
Federal approps.:			
In U. S.........	...	...	...
Outside U. S....	...	...	...
Total new capital..	**$437.1**	**$2,340.2**	**—7**

ENR indexes

		Base years = 100 1913	1926	1949
Constr.	**Apr '54**	**615.36**	**295.80**	**129.00**
cost	Mar '54	613.99	295.14	128.71
Bldg.	**Apr '54**	**437.94**	**236.74**	**124.49**
cost	Mar '54	437.17	236.32	124.27
Volume	**Mar '54**	**426**	**173**	**123**
	Feb '54	345	140	100

PROVING EXTRAORDINARY SERVICE—A Hercules Flattened Strand crane rope delivered 18 months service, compared to 6 months for ordinary rope. It performed equally well as a clamshell bucket rope. On a hot ladle crane it outlasted round strand rope by 4 to 1. It was chosen for its super strength to haul the car on the continent's largest cableway at Kitimat.

Can Flattened Strand solve your special wire rope problem?



Hercules Flattened Strand is a special kind of wire rope that provides extraordinary service on special kinds of jobs.

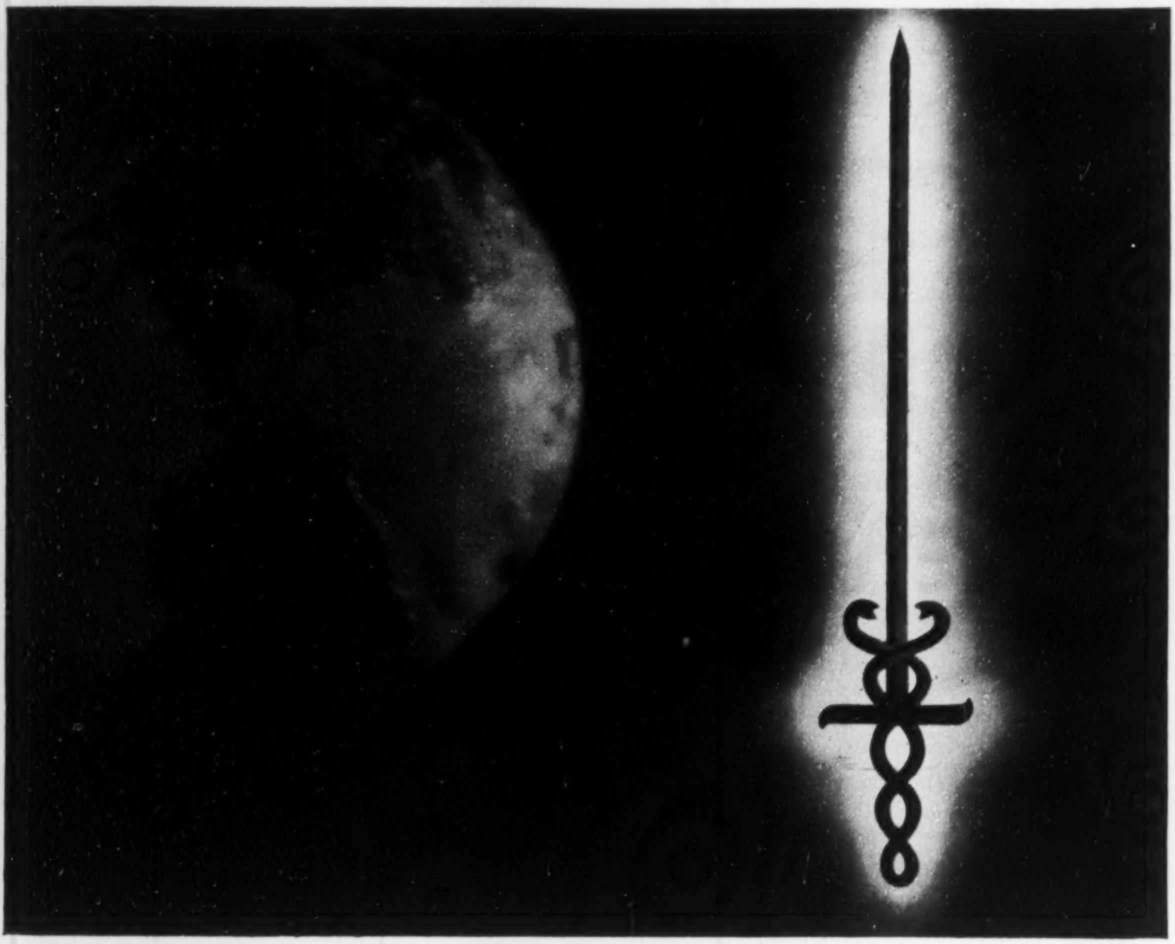
The key to the difference is the triangular shape of the strands. Notice how the strands support each other; how the rope circumference is almost perfectly round; and how the core is smaller. There is 10% more steel in Hercules Flattened Strand than in round strand ropes of the same diameter. That means *10% more strength* and *10% greater safety*. Flattened Strand wears longer and more evenly... and is easier on sheaves and equipment.

If you can use this Super-rope, you'll soon begin saving time, labor, money. Why not investigate?

Because Leschen pioneered and perfected Hercules Flattened Strand wire rope, Leschen is your best source of additional information. Ask your Leschen man, or write for "The Flattened Strand Story."

LESCHEN WIRE ROPE DIVISION
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)
St. Louis 12, Missouri

LESCHEN
HERCULES *Red-Strand*
WIRE ROPE



Why the Sword of Hope is Mightier than Ever . . .

In his ageless struggle on a cold and hostile planet, man's most faithful weapon—sometimes his only one—has been Hope; and it has never altogether failed him.

Even today, in the battle against one of our strongest and cruelest enemies—cancer—there are splendid indications that our hope and faith are not misguided; that the long winter of despair is no longer quite so cold nor quite so dark.

Already, cancer patients are being cured—completely cured—who, even five years ago, would have been beyond all help.

Tens of thousands are living happily this Springtime—and will live through many Springtimes yet to come—because they were *saved* last year from cancer.

Other tens of thousands *could* have been saved by today's knowledge, if only they had been treated *in time.*

Why weren't they treated in time—?

Because of all of us. We haven't worked hard enough at cancer education and service to patients. *And we still haven't given enough money* for training physicians, for clinics, and for research.

Yes, The Sword of Hope—symbol of the American Cancer Society's struggle against a mighty implacable enemy—is stronger and sharper than ever. If it isn't being wielded as powerfully as it might be, it's simply because more help is needed from *everyone.* Much more! Won't you please give *really generously,* this year—?

American Cancer Society

Cancer
Man's cruelest
enemy
strike back
Give

GENTLEMEN:
☐ Please send me free information on cancer.
☐ Enclosed is my contribution of $............. to the cancer crusade.

Name...
Address...
City....................................**State**.............

Simply address the envelope:
CANCER c/o Postmaster, Name of Your Town

OFFICIAL PROPOSALS

RATE: **The rate for Official Proposal advertising is $1.80 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.**

CLOSING DATE: **Friday 10:30 A.M. for issue dated the following Thursday.**

SEND COPY TO: **Official Proposal Division,**
Engineering News-Record
330 West 42nd Street
New York 36, N. Y.

Bids: May 6, 1954

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 6th. day of May 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica, N. Y.						
Oneida	FARC 54-40	Oneida-Verona, S.H. 5558 Proj. F-156(3) Cont. No. 1	1.96	9" Cem. Conc. Pavt. 25' Wide = 1.94 Mi. Misc. Work = 0.02 Mi.	$24,000 Plans $15	$427,000
Montgomery	RC(MT)54-60	Fultonville Village-Fonda Village S.H. 864 Fultonville-Amsterdam Pt. 1, S.H. 5656 (Relocated for N. Y. State Thwy.—Mohawk Sect.-sub. 14)	1.43	Asph. Conc. Opt.= 1.41 Mi. Misc. Work = 0.02 Mi.	$17,000 Plans $10	298,000
DISTRICT No. 3, William Robinson, Weigh Lock Building, Syracuse, N. Y:						
Cayuga	R.C. 54-61	Seventeen Various Highways	....	Removal of 76 Trees	$400 No Plans	7,000
Onondaga	FAC 54-3 FASH 54-3 FASS 54-5 FARC 54-43	Syracuse: Park Street to North City Line Syracuse-Mattydale Luther Avenue Access Road and County Road 208 Connection Syracuse-Cicero, S.H. 5470 and Acc. Rds. Mattydale Interch. Proj. UI-463(9)	4.38	9" Cem. Conc. Pavt. Var. Wide = 3.69 Mi. Asph. Conc. Opt. = 0.48 Mi. Bit. Application and Stone Cover = 0.21 Mi.	$100,000 Plans $15	1,793,000
Seneca	O.T.54-1	New York State Thruway-Ontario Sect. Sub. 1-Restaurant and Gas Station Site (Junius Ponds)	....	Grading, Paving & Misc. Work	$10,000 Plans $10	176,000
DISTRICT No. 5, C. R. Waters, District Engineer, 65 Court Street, Buffalo, N. Y.						
Erie	FASS 54-8	Four Rod Road C. R. 344 Proj. S-296(1)	0.31	Asph. Conc. Opt.= 0.29 Mi. Misc. Work = 0.02 Mi. I-Beam BR. 104.5'	$8,000 Plans $10	150,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Orange and Rockland	P.I.P. 54-2	Palisades Interstate Parkway (Rte. 45-Bear Mt. Circle)	13.87	Roadside Improvement	$16,000 Plans $50	300,000
Orange	FASH 54-9 FARC 54-62	Palisades Interstate Park-Goshen Pt. 1B & 2 Oxford Road, Town Road and Co. Rd. 13 Oxford-Chester S.H. 5297 and Oxford-Chester S.H. 8076 Proj. FI-IG-1050(7) Cont. 2 FI-IG-1050(6)	4.47 (Acc. 0.39)	9" Cem. Conc. Pavt. 2 @ 25' Wide = 3.44 Mi. Cem. Conc. Pavt. on Access Rd.= 0.35 Mi. Asp. Conc. Opt. = 1.01 Mi. Misc. Work = 0.02 Mi. 3 Hy. Seps. Comp. I-Beams 282', 287.1' & 180.5' 2 RR Sep. Comp. I-Beams 169' and 224' 1 Br. R. C. Twin Box 67.3'	$300,000 Plans $100	5,400,000
Rockland	R.C. 54-63	Various Highways	....	Removal of 250 Trees	$1,000 Plans $10	17,000
DISTRICT No. 10, M. E. Goul, District Engineer, Montauk Highway, Babylon, L. I., N. Y.						
Bronx	FAMDE 54-2	Major Deegan Expressway Extension Cont. 8A Proj. U-1082(20)	0.55	Sheet Asp. Pavt. = 0.43 Mi. Misc. Work = 0.12 Mi. Alterations to IRT Elev. RR Alterations to Van Cortland Park Utilities	$40,000 Plans $25	700,000
Suffolk	FARC 54-29	Mattituck-Greensport Pts. 1&3 S.H. 8229 Proj. F-348(5)	1.75	Asph. Conc. Opt.	$14,000 Plans $10	258,000
Suffolk	SMSP 54-1	Sunken Meadow Spur Parkway Cont. 2	7.44	Grading & Drainage	$75,000 Plans $50	1,453,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon wheih the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Bids: May 6, 1954

Soil Explorations and Foundation Investigations

NOTICE TO CONTRACTORS

STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of Highway Law, sealed proposals will be received until 10:30 A.M., Daylight Saving Time, on May 6, 1954 by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y. for

SOIL EXPLORATIONS AND FOUNDATION INVESTIGATIONS AT VARIOUS SITES ON THE SPRAIN PARKWAY, BRONX RIVER PARKWAY, YONKERS TO JACKSON AVENUE, TOWN OF GREENBURGH, WESTCHESTER COUNTY, WHICH CONSTITUTES CONTRACT NO. SPEC. SM-67

Maps, plans and specifications may be examined and obtained at the following offices:

(a) Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany 1, New York
(b) Mr. J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, New York
(c) Mr. Charles Schaefer, Department of Public Works, 270 Broadway, New York City.

The deposit for a set of plans, specifications and proposal forms is $5.00. A refund in full will be made to bidders for return of one set in good condition within 30 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

The Engineer's estimate of cost for this work is $52,230.00.

Proposal for this contract must be submitted in a separate sealed envelope with the name of the contract plainly endorsed on the outside of the envelope. Proposal must be accompanied by draft or certified check, payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum of $2,612.00. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Law, as set forth in "Instruction to Bidders".

The right is reserved to reject any or all bids.

B. D. Tallamy
SUPERINTENDENT OF
PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: May 11, 1954

Contract BT-120.002

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUS TERMINAL
INTERIOR STORE FINISHES—ROOM 2101 (PET SHOP)

Sealed proposals for the furnishing and installation of interior store finish and equipment for Room 2101 on the Suburban Concourse in the Port Authority Bus Terminal will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 11, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Contract Engineer of the Authority, Room 1112, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Contract Engineer, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 22, 1954

Bids: May 27, 1954

Alterations and Additions to Buildings

ALTERATIONS AND ADDITIONS
TO BASIC SCIENCES BUILDING
STATE UNIVERSITY MEDICAL CENTER
SYRACUSE, N. Y.
NOTICE TO BIDDERS

Separate sealed proposals covering Construction; Heating, Ventilating and Air Conditioning; Sanitary; and Electric Work; Electric Elevators and Dumbwaiter; and Mechanical Refrigeration Work for Alterations and Additions to Basic Sciences Building, State University Medical Center, Syracuse, N. Y., in accordance with Specifications Nos. 17339, 17340, 17341, 17342, 17343 and 17344 and accompanying drawings, will be received by Henry A. Cohen, Director, Bureau of Contracts and Accounts, Department of Public Works, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., on behalf of the State University, until 2:00 o'clock P.M., Advanced Standard Time, which is 1:00 o'clock P.M., Eastern Standard Time, on Thursday, May 27, 1954, when they will be publicly opened and read.

Each proposal must be made upon the form and submitted in the envelope provided therefor and shall be accompanied by a certified check made payable to the State of New York, Commissioner of Taxation and Finance, of 5% of the amount of the bid as a guaranty that the bidder will enter into the contract if it be awarded to him. The specification number must be written on the front of the envelope. The blank spaces in the proposal must be filled in, and no change shall be made in the phraseology of the proposal. Proposals that carry any omissions, erasures, alterations or additions may be rejected as informal. The State reserves the right to reject any or all bids. Successful bidders will be required to give a bond conditioned for the faithful performance of the contract in the sum of 100% of the amount of the contract, and a separate bond for the payment of laborers and materialmen as follows: on contracts not more than $500,000.00, 100% of the amount of the contract; on contracts in excess of $500,000.00 and not more than $1,000,000.00, the bond shall be in the amount of $500,000.00; on a contract in excess of $1,000,000.00, the bond shall be 50% of the amount of the contract. Corporations submitting proposals shall be authorized to do business in the State of New York. Drawings and specifications may be examined free of charge at the following offices:

State Architect, 270 Broadway, New York City
State Architect, The Gov. A. E. Smith State Office Bldg., Albany, N. Y.
District Engineer, 109 N. Genesee St., Utica, N. Y.
District Engineer, 301 E. Water St. Syracuse, N. Y.
District Engineer, Barge Canal Terminal, Rochester, N. Y.
District Engineer, 65 Court St., Buffalo, N. Y.
District Engineer, 30 West Main St., Hornell, N. Y.
District Engineer, 444 Van Duzee St., Watertown, N. Y.
District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.
District Engineer, 71 Frederick St., Binghamton, N. Y.
District Engineer, Babylon, Long Island, N. Y.

Drawings and specifications may be obtained by calling at the office of the State Architect, The Gov. A. E. Smith State Office Bldg., Albany, N. Y., and making deposit for each set as follows: Construction, $50.00; Heating, $40.00; Sanitary, $40.00; Electric, $40.00; Elevators & Dumbwaiter, $15.00; Refrigeration, $15.00; or by mailing such deposit to the Bureau of Contracts and Accounts, Dept. of Public Works, The Gov. A. E. Smith State Office Bldg., Albany, N. Y. Checks shall be made payable to the Dept. of Public Works. Proposal blanks and envelopes will be furnished without charge.

DATED: 4/9/54

Bids: May 7, 1954

Construction of Trunk Sewer

SEALED PROPOSALS will be received at the office of the DIRECTOR OF PUBLIC SERVICE, AKRON, OHIO, until 12:00 o'clock noon (Eastern Standard Time) or 1:00 o'clock (Daylight Savings Time) on the 7th day of May, 1954, for the construction of the:

CAMP BROOK SANITARY TRUNK SEWER

in Camp Brook Valley from the Baltimore and Ohio Railroad easterly to the East Corporation Line of The City of Akron.

Drawings, specifications, and blank proposals can be obtained at the office of the Engineer of the Division of Sewerage, by making a deposit of Five Dollars ($5.00). This deposit will be refunded if a proposal is submitted and the drawings are returned in good condition, within five days after the date the proposals are received.

Each proposal must contain the full name of the party or parties making the same, and all persons interested therein, and must be accompanied by a certified check in the sum of Five (5) per cent of the total bid on a solvent bank, as a guarantee that if the proposal be accepted, a contract will be entered into.

Bidders must use City of Akron printed proposal form, as none other will be accepted.

The City of Akron, Ohio, through its duly authorized and constituted officials, reserves the right to reject any or all proposals and to waive informality in any proposal.

THE CITY OF AKRON, OHIO
By: LEO G. WALTER
Director of Public Service

Bids: April 30, 1954

Construction of Hangar

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
HANGAR NO. 11
CONTRACT NYA-363.002

Sealed proposals for the construction of Hangar No. 11 at New York International Airport, including paving and utilities therefor, will be received at the office of the Director of Aviation of The Port of New York Authority, Room 1539, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on the afternoon of Friday, April 30, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Chief, Aviation Planning Division of the Authority, Room 1572, and copies will be furnished upon deposit of $25.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Chief, Aviation Planning Division, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman

Bids: May 4, 1954

Contract NYA-140.024

THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
TEMPORARY TERMINAL MALL AREA
PAKING METER STANDARDS

Sealed proposals for furnishing and installing parking meter standards in the temporary terminal mall area at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1111, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 4, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Contract Engineer of the Authority, Room 1112, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the ceipt shall be delivered to the Contract Engineer, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 22, 1954

Bids: May 11, 1954

Contract BT-130.001

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUS TERMINAL
VENTILATION AND AIR CONDITIONING
SUBURBAN AND LONG DISTANCE BUS LEVELS

Sealed proposals for the furnishing and installation of ventilation and air conditioning for the Suburban Bus Level and the Long Distance Bus Level in the Port Authority Bus Terminal will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 11, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Contract Engineer of the Authority, Room 1112, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Contract Engineer, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not so returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York April 22, 1954

Bids: May 11, 1954

Contract NYA-460.001

HIGH PRESSURE WATER SUPPLY FOR HANGARS 1 AND 2

Sealed proposals for making a high pressure water supply connection for Hangars 1 and 2 at New York International Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, May 11, 1954, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Contract Engineer of the Authority, Room 1112, and copies will be furnished upon deposit of $10.00 per set. The deposit shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to the Contract Engineer, who will furnish the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than forty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within the forty days.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, April 22, 1954

Bids: May 4, 1954

Route 42, Section 3D and Route 45, Section 27A

STATE OF NEW JERSEY
STATE HIGHWAY DEPARTMENT
TRENTON

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Department for:

Route 42, Section 3D, from 11th Avenue to 4th Avenue, Gloucester Township, Camden County, and Route 45, Section 27A, from Marlton Avenue to Grand Street, Borough of Woodstown, Salem County; Drainage Improvements. Length of project 0.650 miles.

The principal items of work are:

Estimated:

1,500 sq. yds.	Macadam Base Course, 6" thick
1,500 sq. yds.	Pen. Mac. Surface Course, Hot Application, 3" thick
30 tons	Pavement Type S.M. 2" thick
2,872 lin. ft.	Rein. Conc. Culvert Pipe
306 lin. ft.	Corrugated Metal Culvert Pipe
36—	Inlets and Manholes

Bids for the above will be received at the office of the State Highway Department, Assembly Room, Room 140, in the State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey, on Tuesday, May 4, 1954, at ten o'clock (10:00 A.M.—EASTERN STANDARD TIME), eleven o'clock (11:00 A.M.—DAYLIGHT SAVING TIME), and will be opened and read immediately thereafter.

The receipt and opening of bids is subject to the proper qualification of the bidder in accordance with the provisions of the prequalification law and the regulations adopted by the State Highway Commissioner. Bidders must also submit a revised financial statement and statement of plant and equipment with their bid.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders during office hours. Plans will be furnished on a deposit of Ten Dollars ($10.00) for each set of plans upon application to A. Lee Grover, Chief Clerk, State Highway Department, Room 139, State Highway Office Building, 1035 Parkway Avenue, Trenton, New Jersey. Bids must be made upon the standard proposal forms in the manner designated in the standard State Highway specifications and must be enclosed in sealed special addressed envelopes bearing the name and address of the bidder and work bid upon on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten percent (10%) of the amount of the bid, provided that the said certified check shall not be less than $500.00 nor more than $20,000.00 and must be delivered at the above place on or before the hour named. Copies of the standard proposal forms and special addressed envelopes will be furnished on application. Bids not enclosed in sealed special addressed envelopes will be considered informal and will not be opened. The right is reserved to reject any or all bids.

Signed: STATE HIGHWAY DEPARTMENT
A. Lee Grover, Chief Clerk

Bids: May 6, 1954

Construction of Highway Bridge

INVITATION TO TENDER

The City of Clinton Bridge Commission invites the proposals of prequalified bidders on a total of seven (7) contracts for the construction complete of a two-lane highway bridge and its approaches over the Mississippi River between the City of Clinton, Iowa and East Clinton, Illinois. The contracts are listed as follows:

No. 1 Earthwork
No. 2 Bridge Substructure
No. 3 Bridge Superstructure
No. 4 Approach Roadway Paving
No. 5 Administration Buildings and Toll Houses
No. 6 Electrical Wiring and Electrical Equipment
No. 7 Illinois Approach Overpasses

Complete sets of plans, specifications and contract documents for bidding purposes may be secured from Mr. Fred G. Hansen, Secretary, City of Clinton Bridge Commission, P. O. Box 70, Clinton, Iowa at the following prices:

Contract No. 1	$20.00	Contract No. 4	$20.00
Contract No. 2	$35.00	Contract No. 5	$20.00
Contract No. 3	$35.00	Contract No. 6	$20.00

Contract No. 7 $20.00

Plans and documents for all seven contracts may be secured at a price of $100.00.

No refunds will be made upon plans and documents returned.

Proposals shall be submitted in the double pocket envelope provided and on the forms provided in the "Contractor's Proposal" which is part of a bound book containing all of the contract documents and the specifications. Two copies of this book will be furnished to each potential bidder. Each proposal shall be accompanied by a copy of this Addendum No. 1 (and any further addenda which may be issued during the advertising period) bearing signature of acknowledgement and acceptance by the bidder.

Each proposal shall be accompanied by evidence of qualification of the bidder by either the Iowa Highway Commission or the Illinois Division of Highways, and shall also be accompanied by a certified check made payable to the order of the City of Clinton Bridge Commission in the amount listed below for each Contract on which a proposal is made:

Contract No. 1	$30,000
Contract No. 2	$130,000
Contract No. 3	$150,000
Contract No. 4	$15,000
Contract No. 5	$5,000
Contract No. 6	$2,000
Contract No. 7	$15,000

Proposals will be received by the City of Clinton Bridge Commission, P. O. Box 70, Clinton, Iowa until 2:00 p. m. Central Standard Time, May 6, 1954, at which time the bids will be publicly opened and read in the municipal courtroom at the County Court House, Clinton, Iowa.

The proposal provides for the return of certified checks of all bidders within ten days, except those of the lowest satisfactory bidder on each contract.

The City of Clinton Bridge Commission reserves the right to delay final acceptance of the lowest satisfactory bids for a period of sixty days, after the receiving date, final execution being subject to the successful sale of an issue of revenue bonds required for the completion of financing the project.

The City of Clinton Bridge Commission is a quasi-public agency created by Public Law No. 526 of the 78th Congress, as reenacted by Public Law No. 357 o fthe 79th Congress and further extended by Public Law No. 220 of the 81st Congress.

The Commission is operating with the advice and financial aid of the:

Iowa Highway Commission
Illinois Division of Highways,
U. S. Bureau of Public Roads

THE CITY OF CLINTON BRIDGE COMMISSION
Mark Morris, Chairman
Fred G. Hansen, Secretary

Bids: May 4, 1954

Construction of Water Testing Laboratory

KENSICO WATER TESTING LABORATORY CONTRACTS 394, 431 432 and 433

SEALED BIDS will be received by the Board of Water Supply, at its offices, thirteenth floor, 120 Wall Street, New York City, until 10:00 A.M., Eastern Standard Time, on TUESDAY, MAY 4, 1954, for each of Contracts 394, 431, 432 and 433 for the constructing and equipping of the Kensico water testing laboratory, located in the Town of Mount Pleasant, Westchester county, New York, all as set forth in the specifications, as follows:

CONTRACT 394, for the construction of the Kensico water testing laboratory, furnishing and installing certain equipment and furniture and furnishing electricity for temporary light and power for the work of constructing and equipping the laboratory. The laboratory will be about 128 feet long and 34 feet wide, consisting of a two-story central portion about 65 feet long, with basement, attic and pitched roof, and of two one-story wings with flat roofs. It will have a structural steel frame, exterior walls of brick with granite trim and interior walls or partitions of brick or hollow tile. The roof of the central portion will consist of pre-cast, nailable, concrete slabs covered with slate roofing, and the roofs of the wings will consist of reinforced concrete slabs, cast in place, and covered with built-up roofing coated with slag or gravel.

CONTRACT 431, for furnishing, delivering, installing and testing plumbing, water supply system and appurtenant equipment and for performing appurtenant work. The plumbing will consist of water, air, vacuum and gas distribution piping, plumbing fixtures and complete drainage systems for sanitary, chemical and other wastes; the

water supply system will consist of two deep well pumps, a pressure tank, air compressor and an underground water main, and the appurtenant equipment will include an instantaneous hot water heater, compressors and vacuum pumps with tanks.

CONTRACT 432, for furnishing, delivering, installing and testing heating, ventilating and steam generating equipment. The heating system will be a low pressure system with two oil-fired steam boilers; the ventilating equipment will include a fresh air ventilating unit and four exhaust fans, and the steam generating equipment will have a high pressure, oil-fired steam boiler.

CONTRACT 433, for furnishing, delivering, installing and testing electric systems and equipment. The work will comprise electric light, power, fire detection, alarm and signal systems in the laboratory, an underground electric feeder to the Lower effluent chamber, a power system in that chamber and a temporary electric system for transmitting electricity for temporary light and power for the work of constructing and equipping the laboratory.

Pamphlets containing information for bidders, forms of bid and contract, specifications, requirements as to surety, etc., of each contract, can be obtained in Room 1316 at the above address. Reproductions of the contract drawings for Contract 394 are bound in each pamphlet for this contract and blueprints of the contract drawings for Contracts 431, 432 or 433 will be supplied with each pamphlet for the respective contracts. A deposit of $5.00 in cash or its equivalent will be required for each pamphlet including drawings and application may be made in person or by mail. Within 30 days following the award of contract or rejection of bids, the full amount of such deposit will be refunded for each pamphlet submitted as a bid and a refund of $4.00 will be made for each other pamphlet with drawings returned in acceptable condition. For further particulars apply at the office of the Chief Engineer at the above address.

IRVING V. A. HUIE, President, EDWARD C. MAGUIRE, HERBERT M. ROSENBERG, Commissioners, Board of Water Supply; BETTY COHEN, Acting Secretary.

Bids: May 14, 1954

Construction of Relief Sewer

SEALED PROPOSALS will be received at the office of the DIRECTOR OF PUBLIC SERVICE, AKRON, OHIO, until 12.00 o'clock noon (Eastern Standard Time) or 1:00 o'clock (Daylight Savings Time) on the 14th day of May, 1954, for the construction of the:

SWEITZER CREEK STORM RELIEF SEWER

from Diamond Drive to Cole Avenue.

Drawings, specifications and blank proposals can be obtained at the office of the Engineer of the Division of Sewerage by making a deposit of Five Dollars ($5.00). The deposit will be refunded if a proposal is submitted and the drawings are returned in a good condition, within five days after the date the proposals are received.

Each proposal must contain the full name of the party or parties making the same, and all persons interested therein, and must be accompanied by a certified check in the sum of Five (5) percent of the total bid on a solvent bank, as a guarantee that if the proposal be accepted, a contract will be entered into.

Bidders must use City of Akron printed proposal form, as none other will be accepted.

The City of Akron, Ohio, through its duly authorized and constituted officials, reserves the right to reject any or all proposals and to waive informality in any proposal.

THE CITY OF AKRON, OHIO
By: LEO G. WALTER
Director of Public Service

Bids: May 20, 1954

Project GA-6-7

The Housing Authority of the City of Atlanta, Georgia, will receive bids for the general construction of low-rent housing Project GA-6-7, consisting of 510 dwelling units and an M&M building, until 2:00 P.M. E.S.T., May 20, 1954. Copies of the plans and specifications may be obtained by depositing $100 for each set with Atlanta Housing Authority, 419 Trust Company of Georgia Building, Atlanta 3, Georgia. The full amount of the deposit up to that for three sets will be refunded to each bidder submitting a bona fide bid, provided the documents are returned in good condition. Refund of $50 per set will be made to all others, including sub-contractors, provided the documents are returned in good condition.

BRIDGE ENGINEERS AND SPECIFICATION WRITERS

Civil Graduates of accredited U. S. colleges. Must have not less than the following experience:

Detailers—2 years structural steel or reinforced concrete detailing.

Designers—5 years responsible work on structural steel and concrete including work on long span bridges.

Squad Leaders—3 years responsible charge of squad on structural steel detailing.

Specification Writers—With design and field experience for writing specifications for steel bridges, concrete structures, and highway construction.

Please mail complete resume together with salary required to:

Howard, Needles, Tammen & Bergendoff
55 Liberty Street New York 5, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

MECHANICAL ENGINEER, graduate preferred. Must have practical experience in installing piping, equipment, plumbing and heating in sewage disposals, filter plants, power plants, industrial buildings, multiple housing, hospitals, schools, etc. Must be experience in bidding and purchasing, and able to assume the overall management of this department. Employment will be with Mid-west firm on salary and profit sharing plan. All replies will be held confidential. Send resume of experience, education, personal details and reference with the first letter. Address P-2329, Engineering News-Record, 520 N. Michigan Ave., Chicago, Illinois.

SALES ENGINEER—We need experienced concrete or concrete construction engineer. Must have sales ability and potential to organize and head branch office. Salary, expenses and commission. Various locations. Considerable traveling. Interesting, long term, independent position. Sika Chemical Corporation, Passaic, New Jersey.

STRUCTURAL DETAILERS: 2 years minimum experience. Pleasant working conditions with old established firm. Write giving resume of experience and education and state salary expected. Richmond Steel Company, Inc., P. O. Box 1578, Richmond 13, Virginia.

POSITION AVAILABLE—Male opening for assistant managing director for contractors cial buildings. Reply giving name, address, age, and full data of experience and references. P-2351, Engineering News-Record.

ESTIMATOR: General Contractor in Lehigh Valley, Pennsylvania. Must have take-off experience on all types of industrial and commercial buildings. Reply giving name, address, age, education, experience and salary desired. P-2352, Engineering News-Record.

WANTED—YOUNG graduate Civil Engineer. Willing to start from the bottom with established road contracting firm. P-2367, Engineering News-Record.

STRUCTURAL CHECKER—We need thoroughly experienced checker of structural steel erection plans, shop detail drawings, etc. Top rate to qualified applicant. Permanent job in New Orleans, La., established fabricating company. Answer fully, giving age, marital status, experience, references who know your work. P-2387, Engineering News-Record.

RESIDENT ENGINEER for rock tunnel construction. Must have experience in supervision of same for owner or contractor. Location southern New England. Submit experience, salary required and references. P-2400, Engineering News-Record.

ELECTRICAL ENGINEER, graduate preferred. Must have practical experience in the overall electrical installations of sewage disposal plants, filter plants, power plants, industrial buildings, multiple housing, hospitals, schools, etc. Must be experienced in bidding and purchasing, and able to assume the overall management of this department. Employment will be with Mid-west firm on a salary and profit-sharing plan. All replies will be held confidential. Send resume of experience, education, personal details and reference with the first letter. Address P-2330, Engineering News-Record, 520 N. Michigan Ave., Chicago, Ill.

CIVIL ENGINEER, graduate preferred, for county and township road and bridge survey design and construction, position permanent, opportunity for advancement. State schooling, experience and salary expected. P. O. Box 23, Carthage, Illinois.

SEARCHLIGHT SECTION

(Classified Advertising)

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BUSINESS: :USED OR RESALE

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SEND NEW ADVERTISEMENTS to N. Y. office, 330 W. 42nd St., N. Y. 36, for May 6th issue, closing April 26th

CHIEF ENGINEER

for Middle Essex County, N. J.

must be thoroughly familiar with site planning, storm and sewer design. Permanent organization.

Salary $10,000 for well qualified man

P-2379, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

SALES ENGINEER

STRUCTURAL STEEL

Experienced in estimating & selling fabricated structural steel for buildings. Reputable firm in Metropolitan New York area. Excellent opportunity.

SW-2447, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

POSITIONS VACANT

WANTED — GRADUATE Civil Engineer to work for Class 1 Railroad in the Northeast. Applicant must be able to engage in all field and office work common to railroad maintenance, and must be able to competently handle structural analysis of bridges and buildings, prepare plans, and estimates, and do necessary field work in connection with bridge, building, and track maintenance and construction. Salary $3,936.00 per annum, or more, depending upon experience and qualifications plus cost of living adjustment. Position has liberal pension, vacation and sickness benefits. Give complete details of educafton, experience and qualifications with application. P-2425, Engineering News-Record.

YOUNG CIVIL Engineer, interested in concrete. Send complete information to Scientific Concrete Service Corporation, 724 Salem Avenue, Elizabeth 3, New Jersey.

WELL ESTABLISHED Company in Central States Area has an attractive opening for an engineer. We prefer a man who has had experience estimating and selling bar joist, steel roof deck and reinforcing steel. We also prefer an individual who has a thorough knowledge of reinforcing bar fabrication capable of setting up a division to fabricate and sell this product. In reply please give references, experience, salary desired and a recent snapshot. Personal interview will be arranged with interested parties. P-2450, Engineering News-Record.

WANTED: CIVIL Engineer with testing experience in soils, asphalt, and concrete to direct laboratory work and investigations. State schooling, experience and salary expected. Midwest P-2478, Engineering News-Record.

WANTED—CONCRETE Paving Superintendent large midwestern contractor operating nationally offers real opportunity for a qualified energetic cost conscious producer to join organization on project in midwest. Salary-incentive basis with eventual participation profit sharing and pension trust plans. P-2483, Engineering News-Record.

PLANT SUPERINTENDENT wanted for old established structural precast concrete Plant. Preferably with Engineering background. Please submit complete resume stating experience, salary required and date available to P-2395, Engineering News-Record.

SELLING OPPORTUNITY OFFERED

WELL ESTABLISHED construction firm desires representative with a knowledge of the construction industry and preferably a command of the Spanish language and customs to represent them in foreign negotiations for work in the building, heavy construction, and Industrial fields. Will headquarter in the Southwest, but must be able to travel extensively. Give full details as to education, experience, salary expected and enclose references and recent photographs. RW-2421, Engineering News-Record.

HIGHWAY ENGINEER - DRAFTSMAN

Qualified to make preliminary road surveys, prepare plans and supervise construction. Emphasis on Federal Aid Secondary Roads. Location, North Jersey. Include age, education, experience, reference and salary expected.

Board of Chosen Freeholders
County of Morris
Morristown, New Jersey

EXPERIENCED ENGINEER

In cost and estimating—Sewers—Paving—Grading. Age 35 to 50. Wonderful opportunity for right man on profit sharing basis with no capital required. If not aggressive and honest do not apply. Firm well established in Northeastern Indiana.

P-2456, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

EMPLOYMENT SERVICE

OVERSEAS PROJECTS Guide to most active constructors-engineers, oil co's., gov't & UN groups hiring for foreign projects. Send $1, Cove-McKane Int., GPO Box 126E, NY 1, NY.

POSITIONS WANTED

CIVIL ENGINEER—Large experience in bridge design and construction, now chief bridge-administrative engineer for north-central state highway department with full responsibility for plans, contracts and supervision of field construction including modern grade separation structures and large stream bridges. Expect to retire from present full time assignment July 1st. and will be available for consultant service (preferably guaranteed retainer for not less than 500 not more than 1000 hours annually) as advisor and to review completed bridge designs and contract specifications for state highway department or other constituted authority for important bridge projects. PW-2486, Engineering News-Record.

CONSTRUCTION EXECUTIVE long New York experience, qualified to handle all phases of contracting, bid to completion, buildings and heavy construction, field or office, open for new connection, preferably in New York area. C. O. Sutherland, 13 Edgemere Blvd., Shrewsbury, Mass. Tel. Worcester 7-3506.

CONSTRUCTION SUPERINTENDENT and Engineer desires work in New England. Experienced industrial plants, housing, heavy construction, bridge and marine work, skilled estimator. PW-2228, Engineering News-Record.

CONSTRUCTION ENGINEER—15 years experience heavy construction, Power plants, refineries, industrials, 2 years Middle East, now completing design contract in Caribbean, some Spanish, Arabic, would like permanent connection. PW-2397, Engineering News-Record.

DRAFTSMAN WANTED—Experienced for detailing miscellaneous and/or structural steel by Bushnell Steel Company, P. O. Box 2579, Jacksonville, Florida. Reply giving brief resume of experience, education, availability, and salary expected. PW-2386, Engineering News-Record.

MECHANICAL SUPT., Mechanical inspector or master mechanic. Twenty-five years' experience with Erection, Repair, Maintenance of heavy industrial equipment in Power Plants, Pumping Stations, Industrial Buildings, Supervising Installation. Testing Air Conditioning, Freon Refrigeration, Steam Boilers, Steam Distribution, P.O.L. Systems, Heating, Plumbing, Diesel Engine Driven Generators. Available now. PW-2375, Engineering News-Record.

(Continued on the opposite page)

STRUCTURAL ENGINEERING

ARCHITECTURAL ENGINEERING

OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. *Forty-fourth year. Write today.*

WILSON *Engineering Corp.*

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Complete Building Estimators Course, also Building Labor Calculator for practicing estimators. Thirty-fourth year serving the building industry. For free trial and all particulars write:

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Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.

Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
411 So. 5th Ave. Lake Worth, Florida

POSITIONS WANTED

(Continued from preceding page)

CIVIL ENGINEER, BSCE, single, 28, experience in railroad engineering department. Desires position in Southern California. Box PW-2371, Engineering News-Record, 520 N. Michigan Ave., Chicago 11, Ill.

ESTIMATOR & CONSTRUCTION Engineer — thoroughly familiar with all phases of take-offs, pricing, sub bids, for commercial and industrial buildings, sewage treatment plants, refineries, PW-2418, Engineering News-Record.

CONSTRUCTION ENGINEER — C.S. graduate 25 years experience general and industrial chemical construction covering new contracts, office project management and field superintendence. Seek connection where top man required. PW-2333, Engineering News-Record.

STRUCTURAL ENGINEER desires responsible position in New York metropolitan area. 25 years' experience in steel and reinforced concrete; 18 years in charge of medium-sized engineering organizations. PW-2443, Engineering News-Record.

CIVIL ENGINEER—senior, registered in several states is now available to supervise bridge design Had bridge experience with first class bridge engineering companies. PW-2441, Engineering News-Record.

SALESMAN EXP. Specs. sales to arch'ts. bldrs. contrs. col. take-off & est. in prior lines seeking pos. in indust. bldg./const. prods. N. Y. fol. drw. acc/other basis 29 yrs. fam. 2 dep. PW-2429, Engineering News-Record.

MAN WELL informed of Manufacturing, Technical and Personnel Problems, seeks position as Functional Propitiator. P. O. Box #944, Warren, Ohio.

ESTIMATOR, CHIEF, extensive Heavy Construction in New York Area on excavation, foundations, piles, tunnels, subways, bridges, overpasses. Responsibility, permanence and growth prime considerations. PW-2353, Engineering News-Record.

SUPT. CONCRETE paving 8 years exp. age 35 years also general Manager—Ready mixed concrete plant. PW-2469, Engineering News-Record.

GENERAL SUPERINTENDENT. Over 25 yrs. heavy construction experience. Qualified to take full responsibility of projects of any type or size. Good background, know men and equipment, available any location immediately. PW-2466, Engineering News-Record.

PROFESSIONAL CIVIL engineer with solid record of accomplishment contemplates establishing consulting firm. Seeks engineer-partner with contacts and demonstrated ability to bring in a flow of consulting business. PW-2475, Engineering News-Record.

CIVIL ENGINEER 26, married, BSCE, experience mainly municipal, desires position with consulting firm or municipality. Preference Rocky Mt. region or west. PW-2458, Engineering News-Record.

CONSTRUCTION & MANAGEMENT Engineer. Reg. Colo. & Tex. Age 46. Broad experience in preliminaries, layout, control, contracts, reports, co-ordination, liaison, personnel, expediting, field design changes & correction, supervision, in valuation, civil, sanitary, paving, utility, building, airport, federal and municipal engineering. Desires position requiring initiative, integrity and executive ability. Will accept unlimited responsibilities if given proper authority. Can handle large organizations successfully. No straight drafting or design. Will go anywhere except hot and humid climates for a salary commensurate with responsibilities. Presently completing 6½ million dollars housing projects plus all utilities as Project Engineer. Available June 1. Box PW-2459, Engineering News-Record.

POSITIONS WANTED

STRUCTURAL ENGINEER — Senior C.E. licensed in several States with excellent experience in bridges, buildings and industrial plants desires to enter into partnership with Consulting Engineer about to retire. PW-2439, Engineering News-Record.

YOU NAME IT—I'll do it: Graduate of Annapolis and M.I.T. in civil eng'r.; Line officer in Navy—4 years; Illinois State Highway—18 months; hydrogen bomb plant construction area engineer—18 months; Indiana ordnance plant construction area engineer—4 months; Paducah atomic plant construction coordinating mechanical superintendent—20 months. Age 34, married, 2 children, hard worker, hustler, conscientious, completely reliable, cost conscious, will make you money . . . Guaranteed. Speak Spanish fluently. Go anywhere. Available June 1, present salary $176.94 per week. PW-2442, Engineering News-Record.

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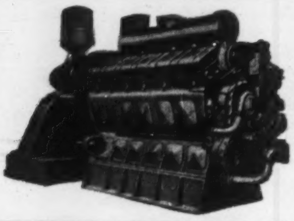

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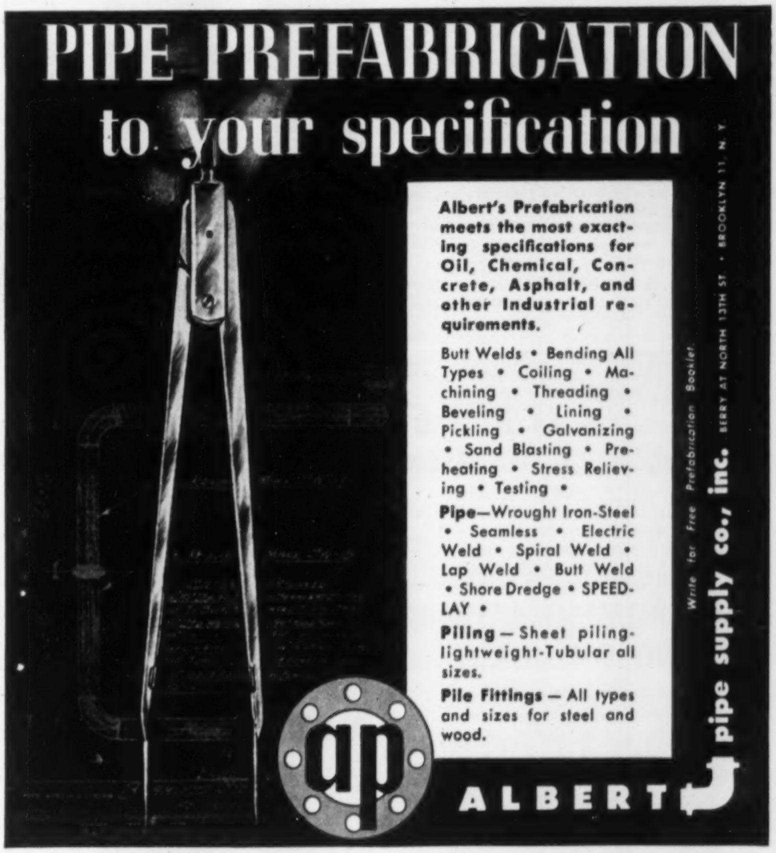

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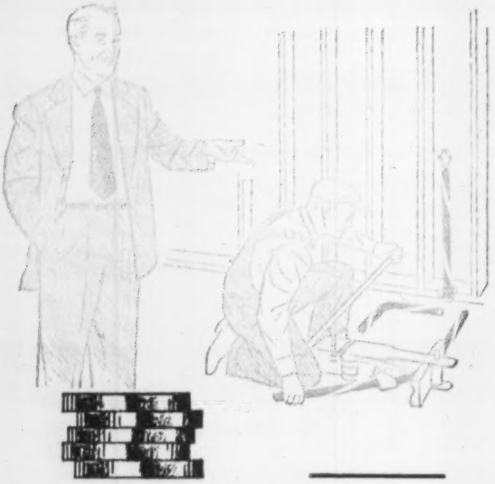

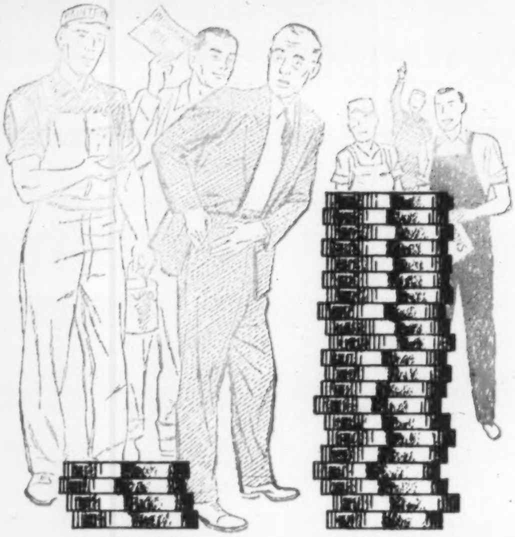

a little more NOW—or a lot more LATER?

Let's take a close look at this so-called higher cost of wrought iron pipe.

All too often, INITIAL COSTS are used as the only basis of comparison. The fallacy of the initial-cost-yardstick has been proved time and time again in installations where low-first-cost piping has been installed and has failed prematurely. The original installation was quickly made by pipe fitters. But repairs call for hours of work by as many as five craftsmen—pipe fitters, masons, carpenters, plasterers, painters. And labor costs are only part of the picture. The indirect costs of production slowdowns and disrupted routine swell the total of every premature pipe failure. It's easy to see how this first failure can wipe out initial "savings" many times over.

The only *valid comparison* of piping costs is INSTALLED COSTS *plus* REPAIRS. This yardstick places the emphasis where it rightly belongs . . . on SERVICE LIFE. In installation after installation, wrought iron pipe has doubled, tripled and even quadrupled the useful service life previously obtained from low-first-cost piping. All this adds up to one thing . . . the fact that you pay a little more for wrought iron means that you pay a LOT LESS FOR MAINTENANCE. Wrought iron gives you *piping economy,* because it lasts longer, at lower cost per year!

If you are concerned about piping services where corrosion is a threat to durability, you'll find it profitable to investigate the longer life of wrought iron pipe. Our Engineering Service Department will be happy to send you examples of typical wrought iron service records in installations similar to those in which you are interested. Write or call.

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This notch-fracture test specimen illustrates the unique fibrous structure of wrought iron—which is responsible for the high corrosion resistance of the material. Tiny threads of glasslike silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

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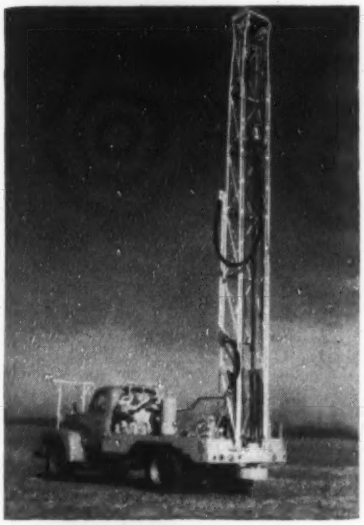


New rugged rotary drill reaches 400 ft depth—fast

Mobility combined with ruggedness and fast drilling is the claim made for the latest development by Failing. Called the Model CBH Holemaster, the unit is completely self-contained, requiring no auxiliary equipment for its operation.

The rig uses a chain feed that employs two 1½-in. pitch chains actuated by two hydraulic motors, through guarded chain drives to an equalizing jack shaft that is said to assure even tension on all chains. The final drive sprockets are mounted on needle-type roller bearings on individual short shafts, permitting feed chains to run in a vertical plane over the table centerline and giving a straight down pull on the kelly. The kelly is round, three-fluted, 3⅜ in. in dia and 23½ ft long.

A vane type double pump, providing two independent constant-delivery pressure sources, operates the fluid motors; gear boxes and jaw clutches are eliminated. Further, the motors "free wheel" while pulling up for spudding or rod connections. The hydraulic drive is said to afford a smooth feed and prevent overstressing, stretching or breaking the feed chains.

The entire feed mechanism is controlled by a single lever.

The rotary table has a 5¼-in. opening and is provided with roller-type slips and pivoted backup tong mounted above the table for breaking out drill pipe. The kelly drive bushing is equipped with a simple, positive lock.

Compressed air used for removal of the cuttings is supplied by a LeRoi compressor that delivers 450 cfm at 50 psi.

The prime mover has an approximate gross carrying capacity of 13,500 lb and a wheelbase—for either four or six-wheeled trucks of approximately 157 in. Carrier is an International Model R190 or equivalent suitable for installing a Failing split shaft heavy duty power take-off.

The rig bores blast holes to 400 ft using a 2⅞-in. drill pipe. Hole diameters vary from 4¼ to 6¼ in. depending on formations and depth.

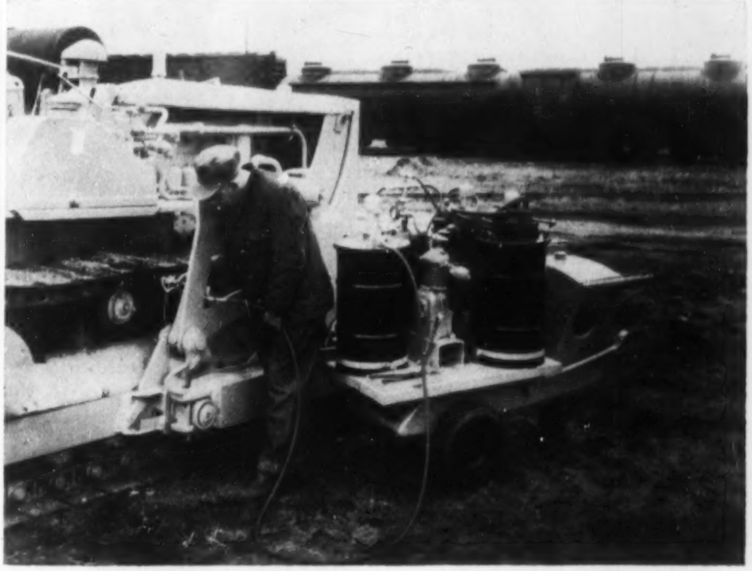
The completely equipped drill less drill pipe weighs 11,700 lb. Weight on recommended truck is approximately 20,000 lb. GEORGE E. FAILING CO., ENID, OKLA.

Portable metal-cutting saw is fast, weighs only 16 lb.

Slightly larger than a hand hack saw but about fifteen times faster, a new electrically powered metal-cutting saw weighs only 16 lb and can be used free-hand in any position. It measures 7½x7½ in. and is 19½ in. long.

Called the Model 524 Porta-Band Saw, the new tool has a stock-cutting capacity up to 3¼x4¼—about equal to a large hack saw. Power is supplied by a ½-hp motor through xxxx reduc-

(Continued on page 104)



Lube service is put on wheels

Designed to use standard 100-lb drums of motor oil and lubricants, a newly developed, self-propelled service station is reported to provide a low-cost method of maintaining construction equipment, insure timely service and eliminate duplication of manpower and equipment. The mobile unit is powered by a 6-hp Wisconsin engine that can be equipped with either a rope or electric starter. The entire unit, including compressor, air tank, space for three 100-lb drums, tool trays, service hoses and lubricant pumps is only 31 in. wide. The unit is said to manage rough ground and steep slopes and can be run up planks into a truck for long hauls between jobs. It features Alemite equipment for handling motor oils, gear lubricants and pressure gun lubricants as well as an air delivery hose that is equipped with tire chuck. The Prime-Mover Co., Muscatine, Iowa.

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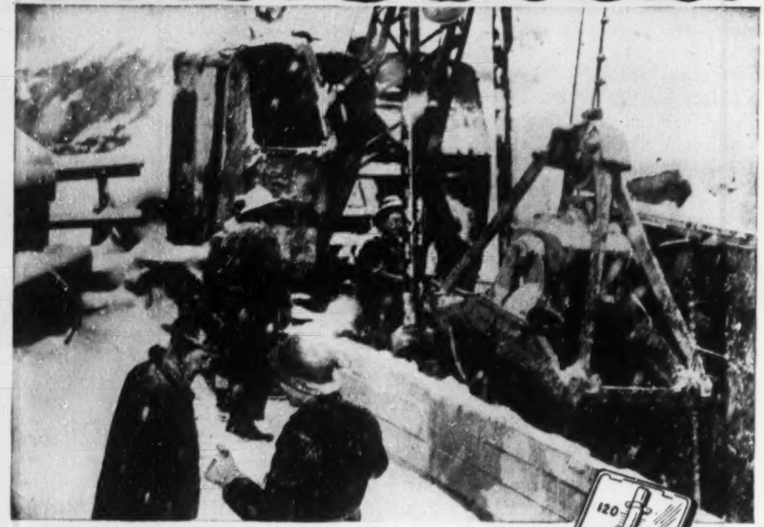

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tion pulleys. The band speed is 240 fpm under load or about midway between the speeds recommended for ferrous and nonferrous metals.

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Lightweight units combat excessive industrial noise

Small, lightweight sound absorbing units offer a low cost solution of industrial acoustical problems. Known as Sonosorbers, the units consist of perforated aluminum box lined on the interior with a thin layer of glass fiber mat.

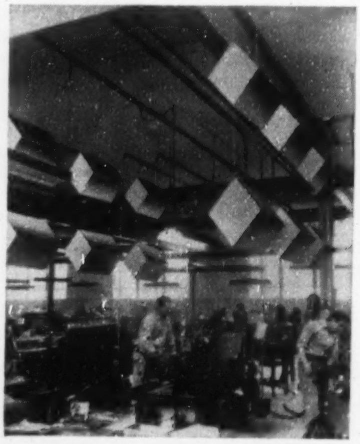
The absorbers are about 2 ft long and are hung on 2, 4, 6 or 8-ft centers or as desired. They may be used in clusters or honeycomb patterns or even in layers or groups over and near the source of sound. A sound shield or screen may be hung in one or more layers to isolate noisy locations.

According to the manufacturer, the units have a high value of noise absorption in both high and low frequencies. Placed in an intense sound area, their physical structure reportedly tends to absorb the sound through diffraction.

It is pointed out that the use of Sonosorbers does not require alteration or moving of sprinklers, lighting fixtures, skylights, etc.

The absorbers are shipped knocked down—25 units to a carton—and are easily assembled and installed. Each unit weighs about 2½ lb. SONOSORBER CORP., 21 S. 16TH ST., EAST ORANGE, N. J.

(*New Products continued on page 106*)



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Portable electric generator

The new Model B-2000 Lynnco Powerhouse, hand portable, engine-driven, electric generator plant is said to offer more power in less space at lower cost than any conventional unit in its power range.

The plant, manufactured by Lynn Engineering & Supply Co., Russ Bldg., San Francisco 4, Calif., incorporates an unusual setup in which the small diameter alternator is tucked under the engine gas tank and fastened rigidly to the crankcase with studs. This arrangement adds only 4½ in. to the overall width of the standard engine and results in compactness and accessibility.

The new unit has a maximum output of 2,500 watts; continuous rating is 2,000 watts, 115 volts, single phase, 60 cycles; overall dimensions are 17x23x19½ in. Weight is held to approximately 145 lb. Power is supplied by a 5 hp Briggs & Stratton.

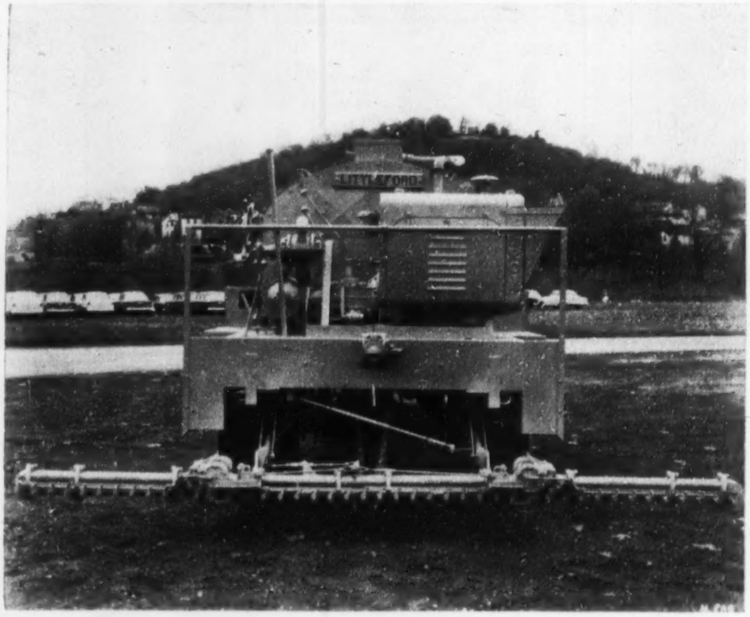
New Products briefs . . .

• **Truck mixers**—A new 5½-cu yd mixer has been added to the Challenge line distributed by Cook Bros. Equipment Co., 3334 San Fernando Rd., Los Angeles 65, Calif. Major advantage of the new unit is that legally it carries full-rated capacity payload in 38 of the 48 states on the same standard 3-axle truck currently required by many 4½-yd mixers.

• **Diesel engines**—Featuring a hinged crankcase and a detachable governor for easy adjustment, the Bamford single and twin cylinder slow-speed diesels (from 3½ to 16 bhp at 600 to 700 rpm) are now available in the United States through the International Selling Corp., 122 E. 42nd St., New York 17, N. Y. The seven models in the line are of the direct injection type and usually require no speed reduction unit when they are used for most driven equipment.

• **Crawler side boom**—A new side boom for a crawler tractor with a 38,000-lb lifting capacity at 4-ft overhang is now manufactured by Tractomotive Corp., Deerfield, Ill. Designated Model TSB-9 the side boom is designed for Allis-Chalmers HD-9F trac-

(Continued on page 108)



New spray bar has no-drip feature

A new spray bar has been designed for use on Littleford Spray Master and Spray King bituminous distributors. The bar is of the mechanically operated, full-circulating type and covers a 24-ft swath.

One lever controls the spraying operation; pulled back—the nozzles spray in unison, pushed forward—the spray is shut off. Shutoff, it is reported, is positive and eliminates drip. The nozzles are spaced on 4-in. centers and have individual valves to control spray characteristics.

The bar has an added feature in the hinged ends that may be locked in folded position for traveling. Sections may be added or removed as required by loosening two bolts. Littleford Bros., Inc., 457 E. Pearl St., Cincinnati 2, Ohio.

GREATER OUTPUT
LOWER UPKEEP
WITH NEW
TORQUE CONVERTER DRIVE

New standards of tractor-shovel performance are being set by the famous 1½ yd. Model HM "PAYLOADER" because a NEW Torque Converter drive has been added to its many features. A year of extensive field-testing proves that this new development insures faster, lower-cost materials handling because output is increased up to 1/3 and maintenance is drastically reduced.

Combined with the 4-speed, full-reversing transmission, the Torque Converter provides an unlimited range of automatically selected speeds to meet the load and operating conditions. Parts breakage and maintenance are less because shock loads are absorbed.

Prove to yourself that this pioneer four-wheel-drive tractor-shovel, with torque converter, is the finest tractor-shovel available. Ask your "PAYLOADER" Distributor for a demonstration, or write The Frank G. Hough Co., 772 Sunnyside Ave., Libertyville, Illinois.

TORQUE CONVERTER DRIVE

MORE EFFICIENCY — Engine operates at most efficient speeds — no laboring or stalling

LOWER MAINTENANCE — Oil cushion absorbs load shocks—protects vital parts

EASIER OPERATION — Eliminates much gear-shifting and "clutching"

GREATER OUTPUT — Machine operates at highest speed in relation to load

HOUGH
model HM
PAYLOADER

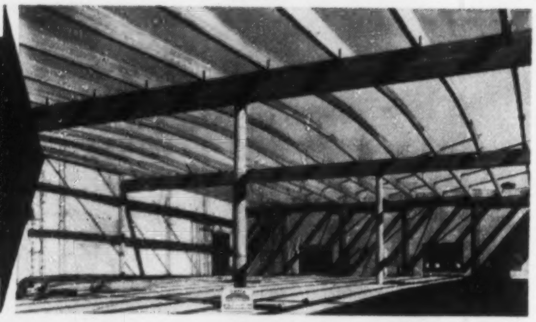
YOU CAN'T COMPETE IF YOUR EQUIPMENT IS OBSOLETE

PAYLOADER®

Write for

full details on the big 1½ yd. Model HM, or on any of the six smaller "PAYLOADERS" — 1⅛ yd., 1 yd., ¾ yd., ½ yd. or 12 cu. ft. sizes.

One of seven 180'×100' bays of Mt. Rainier Ordnance Depot near Tacoma, Wash. Carrying beams are 11"× 35¼", spaced at 60 feet. Cantilevered purlins are 7" ×24⅜", tapered to 7"×13" in the center section and spaced at 8 feet. Roof deck is heavy tongue-and-groove sheathing with built-up roof surface. Design by Army Corps of Engineers; John H. Sellen Construction Co., Seattle, general contractor.



Bargain in Efficient Floor Space

This warehouse, which has only four posts for each 18,000 square feet of floor area, is an object lesson in permanent construction, quickly erected and at low cost. Beam and purlin roof framing is dimensionally stable, requires no maintenance, and permits minimum cubage. This reduces construction costs and heating expense.

Structural problems of many kinds are met economically and permanently with timber arches, trusses and rigid frames. For detailed information on these structural units see your nearest Timber Structures office, or write us for a free copy of booklet, "Modern Construction".

TIMBER STRUCTURES, INC.

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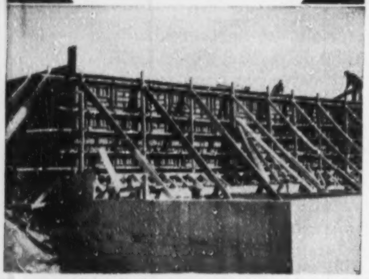
Offices in Ramsey, N. J.; Chicago; Detroit; Lenexa, Kansas; St. Louis; Minneapolis; Columbus; Omaha; Des Moines; Dallas; New Orleans; Birmingham; Charlotte; Memphis; West Hartford; Seattle; Spokane; Eugene; Richmond, Calif.

Reduce costs and
INCREASE PROFITS
by renting these metal forms for concrete



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CORE BORINGS
for Foundations, Dams, Bridges and all Heavy Structures
GROUT HOLES

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Ruggedly-Built
PILE EXTRACTORS

Provide exceptional pulling power, with the sharp energy of blow needed to vibrate and loosen stubbornly set piling. These double-acting extractors come in two standard models—heavy and extra heavy. Standardized line also contains 11 double-acting hammers and 5 single-acting hammers. Write for free bulletin.

Also builders of coal and ore bridges, bulk material unloaders, bridge operating mechanisms, hoists and marine equipment, and specially designed machinery.

McKiernan-Terry Corporation
Manufacturing Engineers
13 Park Row New York 7, N. Y.

tor. Two features have been added to the new side boom: First is a front-powered take-off that leaves the back of the tractor free for installation of a winch or other rear-mounted equipment; the second feature is the twin clutch arrangement that permits the operator to change from raise through neutral to power down on either the load or boom line—no gear shifting is necessary. The TSB-9 has an effective counterweight of 6,500 lb that can be extended and retracted hydraulically.

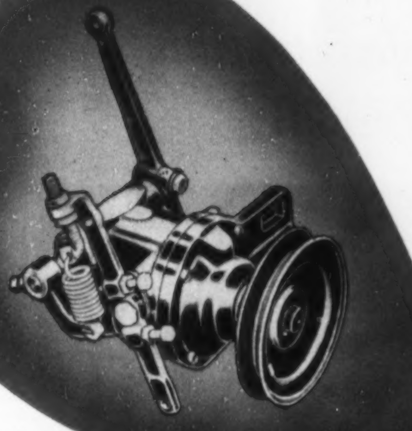
• **Air meter**—A new Protex air meter is now being manufactured by the Autolene Lubricants Co., Industrial Division, Denver 9, Colo. The new meter has been designed to give easier, faster, more accurate readings and to sell at the same price as the previous model—$98.50 f.o.b. Denver. It is said that no special training is needed for the operator to get accurate results, for the meter gives direct reading of percentage of air in the concrete.

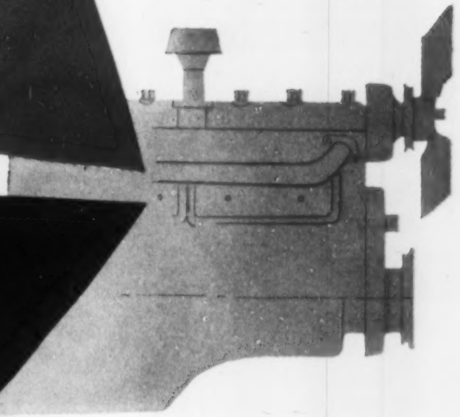
• **Internal combustion engines**—Four high-output internal combustion engines developed jointly by Continental Motors Corp. and U. S. Army Ordnance have been made available for commercial use. The engines include the six-cylinder 375-hp AO-895-4; a supercharged type, the AOS-895-3, which develops 500 hp; the 12-cylinder 810 hp AV-1790-7; and its supercharged counterpart which turns up 1,040 hp.

• **Cutting tip**—A new cutting tip which permits faster machine cutting of bevels on steel plate of ½ to 2 in. thickness is now being produced by National Cylinder Gas Co., 840 N. Michigan Ave., Chicago 11, Ill. The unique feature of the new tip is an added set of orifices positioned to permit six additional preheat flames to impinge directly on the line of cut. Its effect is said to be the same as if a heating tip, especially designed to avoid heat loss by deflection, were coupled to a standard cutting tip. The tips are made in three sizes for use with oxygen and acetylene and attached to the company's Torchweld No. 70 and No. 71 machine cutting torches.

• **Pipe threader**—A new low-cost power drive for hand pipe tools, the No. 142 Featherweight Champ, is now being produced by the Oster Mfg. Co., 2057 E. 61st Pl., Cleveland 3, Ohio. The new unit weighs 75 lb and is available with either gas or electric power. It has a threading range of ⅛ to 2 in.; spindle speeds are 22 to 36 rpm variable with the load.

the heart of your engine...





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are your most economical and efficient control mechanisms for industrial engines . . . from small generator sets to monster power units . . . gas (LPG), gasoline or diesel. Service is locally available . . . your nearby Pierce Service Station is equipped for all types of Pierce Governors.

Specify PIERCE Centrifugal governors on your engines . . . for economical, thoroughly dependable control in industrial applications.

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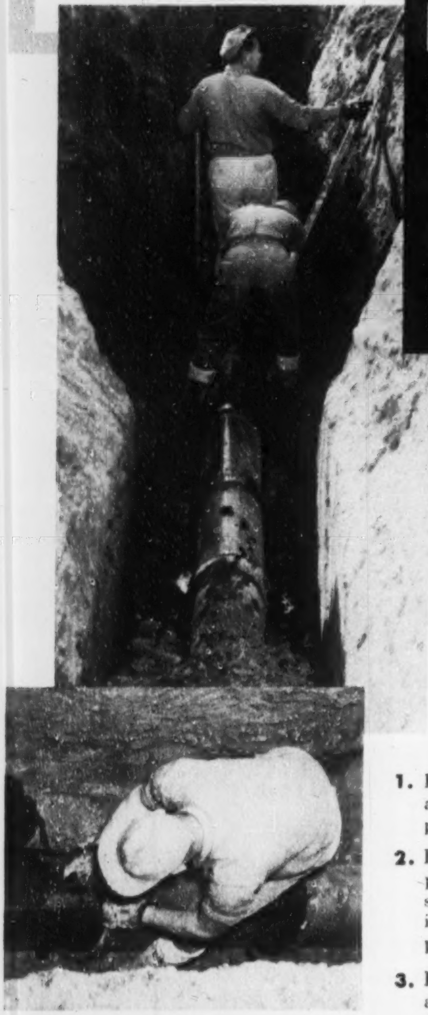

Ground Water Infiltration Gets the 1-2-3 PUNCH! with

PRESSTITE'S Cold Applied 3-STEP SEWER SEALING SYSTEM

To knock out excessive ground water infiltration and protect against overloading the disposal plant, engineers at Lawrence, Ind., wanted tight, dependable sewer joints. That's why they specified Presstite's 3-Step Sewer Sealing System for 18 miles of new sewer lines serving 2000 homes.

Presstite's extensive research plus 30 years' manufacturing experience have resulted in development of the most effective, economical method to obtain tighter sewer joints:

1. Presstite Primer... a hard base asphaltic priming paint to first prime pipe bells and spigots.
2. Presstite ROPAX . . . non-porous packing that provides *additional* joint sealing material. When caulked back in the bell, it forms a solid seal, impervious to passage of water.
3. Presstite KALKTITE... cold mixed and applied joint sealing compound that sets up even under the most adverse conditions and forms a dense, tough and flexible seal that *stays* watertight.

Sealing tight, dependable joints with Primer, Ropax and Kalktite on Lawrence job.

For substantial savings in time and labor, too, you can't beat the Presstite System. Its fast, easy application allows installation of more joints per man, per hour, per day.

PRESSTITE SEALING COMPOUNDS

WRITE TODAY for samples and complete details on Presstite's cold applied 3-Step System for tighter, better sewer joints.

PRESSTITE ENGINEERING COMPANY

3784 CHOUTEAU AVE. ST. LOUIS 10, MISSOURI

PUBLICATIONS

Demineralizing water–A 39-page booklet on treating water by demineralizing it is now available from a manufacturer of water-treating systems. This "Handbook on Demineralizing" explains the principles of ion exchange, and applications of many anion and cation exchange materials are discussed. A series of curves makes possible estimates of cost of operation of such systems. Operating results and flow diagrams of several existing plants are shown. Bulletin 5800. COCHRANE CORP., 17TH ST. BELOW ALLEGHENY AVE., PHILADELPHIA 32, PA.

Compressors–A new 6-page, 2-color booklet describes the Davey Super Chief 315-500-600 cfm models of air compressors. Illustrations show the models in 4-wheel and skid-trailer mounted units. Model 315 is included with gasoline and diesel engines. Models 500 and 600 are listed in diesel-powered units only. Complete specifications are contained along with an air requirements table for air tools. Form E. DAVEY COMPRESSOR CO., KENT, OHIO.

Ceilings–"Design Data and Laboratory Tests on the Use of the Plenum above Acusti-Luminus Ceilings" is the rather lengthy title of a rather short new brochure. Based on tests by the Illinois Institute of Technology of Chicago, it is designed to answer questions that may arise concerning the use of the plenum for heating or ventilating. The brochure describes in some detail, supplemented by graphs and illustrations, such elements as pressure loss, flow pattern, heat transfer, plenum supply (feeder duct arrangements, sidewall grille feeders, multi-vent valve feeders) and plenum exhaust (grille, perforated outlet, high velocity outlet). Also contained is additional material on sound absorption and acoustical characteristics. ENGINEERING DEPT., LUMINOUS CEILINGS, INC., 2506 W. NORTH AVE., CHICAGO 47, ILL.

Water softener–A new brochure contains information for the accurate specification of water softener equipment for various installations where hardness-free water is desired or required. In two colors, the booklet contains complete data on valves, as well as detailed short-cut specifications on the Illco-Way softener units. The booklet shows individual model numbers, exchange capacities, flow rates, size of units and meters, volume of mineral, amount of salt and shipping weight. The new brochure is designed to give a plant engineer or a consulting engineer the data, measurements and information he needs in clear and concise form. ILLINOIS WATER TREATMENT CO., 840 CEDAR ST., ROCKFORD, ILL.

Motor lubrication–Comparisons of methods for lubricating motors are depicted in a new bulletin, which illustrates the thre principal types of bearings used in motors—cartridge, standard open and Lubriflush—with explanations of the function of each. Bulletin 1848. U.S. ELECTRICAL MOTORS, INC., BOX 2058, LOS ANGELES 54, CALIF.

High-strength bolting–A new 8-page folder gives the "whys and wherefores" of high-strength structural bolting. Sections are devoted to discussions of bolts vs. rivets and also to the basic principles of high-strength bolting. Data is also included for the design and fabrication of bolted structural joints as well as specifications for assembly of structural joints using high tensile steel bolts. Ordering directions are also included in the booklet offered by THE LAMSON & SESSIONS CO., 1971 W. 85TH ST., CLEVELAND 2, OHIO.

Labor cost–"How to Estimate Cost of Material and Labor for Follansbee Terne Metal Roofs" is the title of a bulletin designed for estimators and roofing contractors. Data and work tables for determining roof areas by measurement or calculation are contained in the new 6-pager. It also includes a method for figuring required rolls of terne metal for a specific roofing job and a formula for price quotation, based on cost of material and labor adjusted to allowances for overhead and profit. A simplified table is keyed for quick calculation of overhead and percentage of profit allowances ranging from 10 to 50%. FOLLANSBEE STEEL CORP., PITTSBURGH 30, PA.

Corrosion resistance–Bulletin A-156 covers results from tests that indicate that the more corrosion resistant a steel is, the more enduring the protective value of a paint covering. Comparison is made between a carbon steel, a copper steel and a low alloy high strength steel. The latter proved superior. INTERNATIONAL NICKEL CO., INC., 67 WALL ST., NEW YORK 5, N. Y.

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EDITORIALS

Cause for optimism

THE PURPOSEFUL WAY in which congressional leaders have pushed the new highway legislation, and the generally favorable attitude that most congressmen have adopted toward it are deserving of high praise. The problem of more money for roads—not just a little, but a lot more—was one requiring statesmanship for its solution. The new federal aid formula, emphasizing the relatively greater needs of populous states, was one product of this statesmanship. The new matching formula, cutting the states' contribution and increasing the federal share, was another. Both formulas are focused on difficulties that were holding roadbuilding back.

As our review of state highway department budgets for this year shows (see p. 21) planned work is forging ahead even without the increased federal aid. Looking ahead to when the new funds become available a year from now, it is not difficult to visualize the greatest road-building boom in history. For the first time in many years there is real cause for optimism in the highway field.

Those Washington investigations

THE CONTINUING BATTLE of investigations in Washington is proper cause for concern to construction men. Nor does this arise solely from Senator McCarthy or his mixed-up squabble with the Department of the Army, although he is the current focus of interest. What is important is that investigations are being conducted by groups of men who somehow have assumed the functions of judge, jury and book of rules.

Construction men will have no difficulty in remembering that their own industry was involved in similar—and quite as nasty—battling within a little more than a year. It is only necessary to recall the various investigations into the now-famous North African airbase work to find construction men both in and out of government sitting in the same seat so uncomfortably occupied recently by General Zwicker and Secretary Stevens.

In those hearings, the very same tactics were employed: The technique of the long, tortuous question; the often unsubstantiated attack on witnesses on matters not pertinent to the investigation; the refusal by the committee to permit the recording of objections to lines of questioning; the spreading on a public record of statements without proof; the impossibility of redress against the accuser by legal means.

There is no question of the right of legislators to carry out investigations, and Congress should have at its disposal every facility for ferreting out information. But the sort of unbridled action that has developed over the last several years must not be permitted to continue, lest it end by destroying the freedom which it was invoked to protect.

No one—not even a member of Congress—can be permitted to usurp the functions of the courts and the elaborate system of judicial procedure that has been built up to protect the individual and the state. No one—not even a member of Congress—can be permitted to make unchecked, irresponsible charges against an individual or a business concern or a service of the government.

It is time to call a halt. Before his death, Senator Taft reportedly was at work on a measure that would have set out rules of procedure for congressional investigations, outlining the boundaries of those activities and the manner of handling witnesses, evidence, and the like. Similar proposals have been made more recently. The members of Congress, and their constituents, should take these proposals seriously. The ordinary citizen has fought long and hard for his rights as an individual before the courts. He is entitled to the same rights before Congress.

What's in a name?

DEDICATION two weeks ago of the Robert A. Taft Sanitary Engineering Center in Cincinnati gave the nation an important new facility whose name does honor to both its origin and its purpose.

The needed new research and education center bears the name of Ohio's late Senator, in recognition of his sponsoring legislation authorizing it—the Water Pollution Control Act of 1948. As a memorial to his distinguished public service, this greatest facility of its kind in the world (described in ENR June 18, 1953, p. 37) seems destined to do honor to the Taft name by some considerable public service of its own—providing much needed answers to questions bearing on the nation's health and welfare.

The second significant aspect of the name is the substitution of "Sanitary Engineering Center," for Environmental Health Center—the name of the existing collection of inadequately housed facilities in Cincinnati. Unsatisfied that the old name would do justice to the kind of engineering program planned for the new installation, Public Health Service people spent a number of months considering the change and discussing it with interested persons outside the PHS before recommending its adoption. Their reasoning, expressed by Chief Engineer Mark Hollis of PHS, has been that there is a "definite trend back toward recognition of the term sanitary engineering as the best and proper one to mean the application of engineering principles to public health." This is a trend which should be strengthened with the recognition surely to be gained for the new laboratory by the able persons who will work in it.

Look
behind
the
pump

How much for maintenance?

In figuring the cost of a trash pump, what do you allow for maintenance . . . how much to clear out the trash that clogs the impeller? Will it be daily? Every other day? Weekly?

Or figure it this way. What price a pump that won't clog . . . that will virtually eliminate maintenance?

That's why you should figure the Fairbanks-Morse Bladeless Impeller Pump! Its unique whirling tube won't clog . . . there are no blades or projections to catch and hold trash.

This is just one more example of the quality that is Fairbanks-Morse . . . in design, materials, workmanship, a standard of quality that gives you more for your pump dollar. For pump performance you can depend on, rely on the world's largest manufacturer of a complete pump line. See your Fairbanks-Morse Branch or write Fairbanks, Morse & Co., 600 S. Michigan Ave., Chicago 5, Ill.

FAIRBANKS-MORSE

a name worth remembering when you want the best

PUMPS • SCALES • DIESEL LOCOMOTIVES AND ENGINES • ELECTRICAL MACHINERY • RAIL CARS • HOME WATER SERVICE EQUIPMENT • FARM MACHINERY • MAGNETOS

1,000 horsepower hoists the bucket—2 TIMKEN® bearings carry its weight

IT takes two 500 horsepower motors to hoist the bucket when this new Marion 7800 walking dragline stretches out its 220-foot boom, scoops up 35 cubic yards of strip mine overburden, and raises it as high as 85 feet.

All the load, of course, is concentrated on the boom point sheave. Which is one reason Marion engineers mounted the sheave on Timken® tapered roller bearings. Line contact between rollers and races gives them capacity to spare. And regardless of the load, these Timken bearings turn with little friction, because they have true rolling motion.

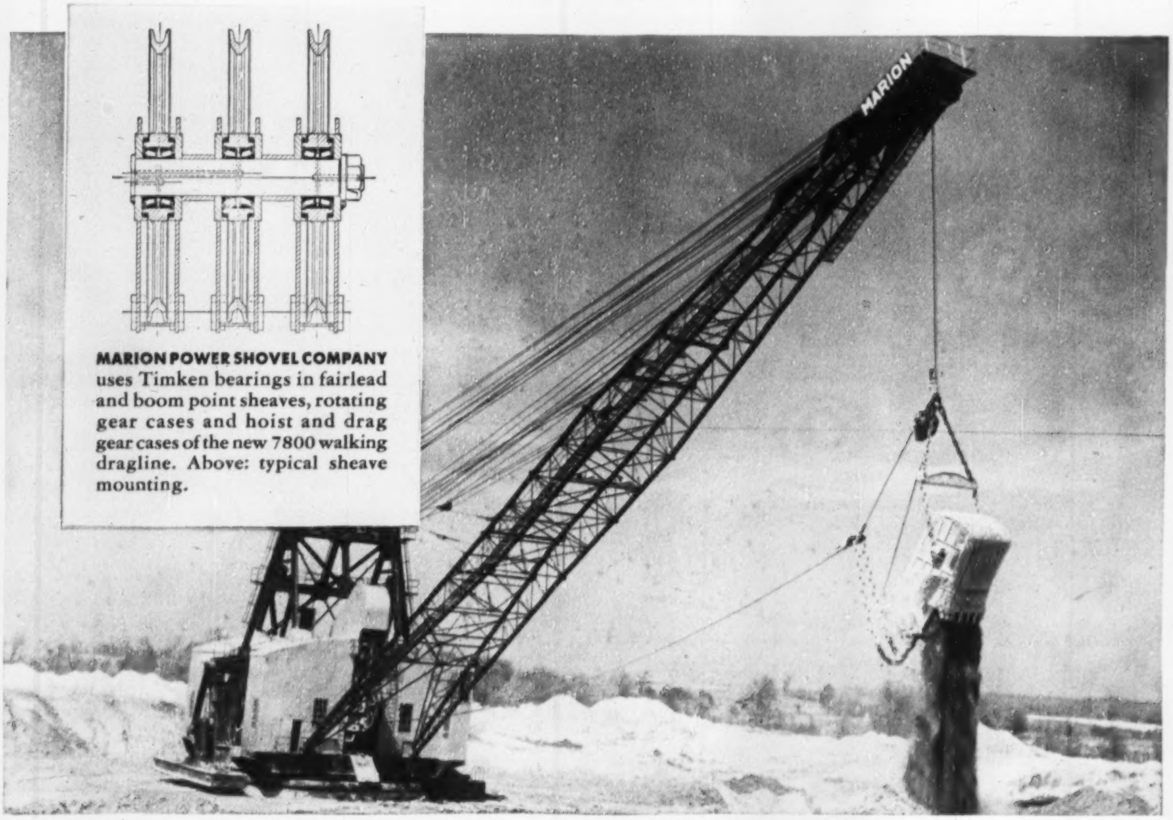
When the bucket swings to dump—in a circle over 150 yards across—its sideways pendulum action tries to twist the big sheave out of line. This adds a heavy thrust load to the already-heavy radial load on the bearings. But the Timken bearings, being tapered, can take both kinds of loads in any combination. No extra thrust bearings are needed.

Timken bearings are made under the only complete quality control in the bearing industry. We go so far as to make the steel ourselves; no other bearing maker does.

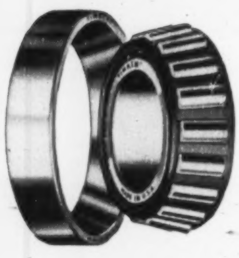
It all adds up to longer life and lower maintenance with Timken bearings. And, in terms of performance, lowest cost. Building or buying machines, specify the bearings with the trade-mark "Timken". The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TIMKEN TAPERED BEARINGS EQUIPPED

This symbol on a product means its bearings are the best.



MARION POWER SHOVEL COMPANY uses Timken bearings in fairlead and boom point sheaves, rotating gear cases and hoist and drag gear cases of the new 7800 walking dragline. Above: typical sheave mounting.



TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

WE MAKE OUR OWN STEEL

The special grade alloy steel which gives Timken bearings their strength and resistance to wear is made in our own steel mills.

The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacturing; 3. rigid quality control; 4. special analysis steels.

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ▯ AND THRUST →▯← LOADS OR ANY COMBINATION ✳